



BENCHMARKS

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Using Computers for Research

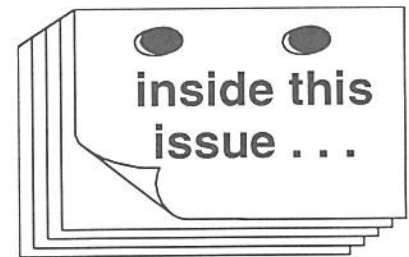
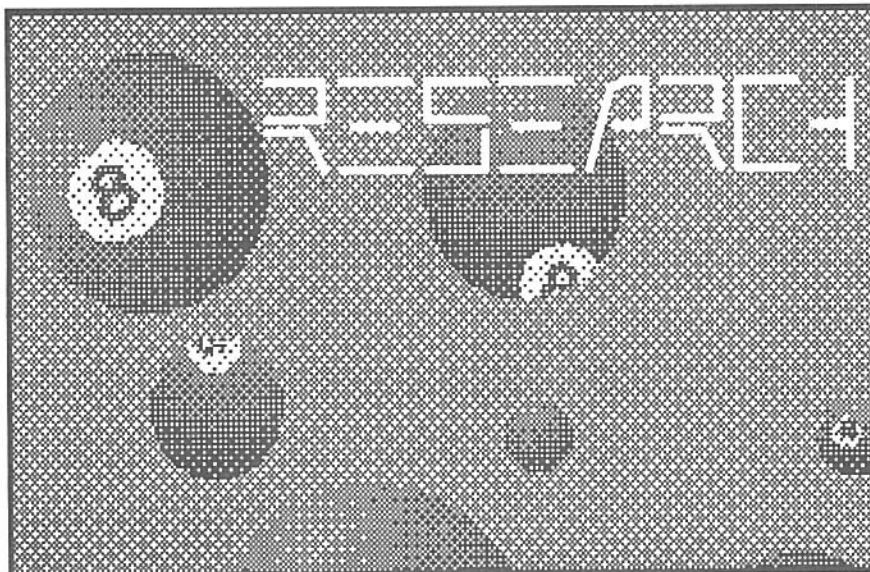
By Claudia Lynch, *Benchmarks* Editor (as04@unt.edu)

In March of 1982, Bob Brookshire (who is now an Associate Professor of Information and Decision Sciences at James Madison University in Harrisonburg, Virginia) began a series of articles entitled "Using the Computer for Research." The articles appeared in almost every issue of *Benchmarks* from the March/April 1982 issue through the November/December 1983 issue and covered just about all aspects of doing data analysis at the University at that time. It is interesting to note that the words Bob wrote in his introductory article back in 1982 are still true today, as you will see from the portions of that first article that are reproduced below.¹ Follow Bob's recommendations and you are bound to be a successful researcher.

No other technological development has had the profound impact that the development of the modern, high-speed, digital computer has had on the conduct of research, especially in the academic setting. The computer has freed the researcher (and his graduate assistants) from the seemingly endless hours of computation necessary to perform even the most rudimentary research in mathematics and physics, and has made widely available a range of statistical procedures previously accessible only to a few specialized technicians.

¹ Brookshire, Bob "Using the Computer for Research: Part I," *Benchmarks* (Vol.3, No. 2, pp. 6-8).

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Area code 214 must dial 817 before the METRO #, see note to the right.

Note: Dialing 1 before the area code will result in a long-distance charge.

Set Data Bits to 8, No Parity, Stop Bits to 1 except on the 3461 line, where Data Bits are set to 7, Parity to S, and Stop Bits to 1. When dialing in, the autobaud feature requires you to hit the <RETURN> key repeatedly after the connection is made so that the receiving modem can determine the baud rate. When you see the prompt (# for local numbers, UNT Modems> for the metro lines) you can enter one of the following commands to connect with the system of your choice.

ACS Host Systems	Local Phone Lines (# prompt)		METRO LINES (UNTMODEMS> prompt)	INTERNET (CUTCP, NCSA)
	SYTEK/HST Lines (3461)	Other lines (3300, 3989) Type SHOWD for list of hosts.		
Academic Mainframe (CMS, Academic COM-LETE)	CALL 3270	CALL VM3270	CONNECT VM3270 or VM3271, VM3272, VM3273	tn3270 vm.acs.unt.edu -OR- telnet vm3270.acs.unt.edu
VAX (VMS)	CALL DEC	CALL DEC	CONNECT DEC	telnet vaxb.acs.unt.edu
Sol (UNIX)	CALL 900	CALL SOL	CONNECT SOL	telnet sol.acs.unt.edu
Jove (UNIX)	Inaccessible	CALL JOVE	CONNECT JOVE	telnet jove.acs.unt.edu
Gopher [dedicated Gopher Server]	Inaccessible	CALL GOPHER	CONNECT GOPHER	telnet gopher.unt.edu
Departmental Systems				
Ponder (Computer Sciences Sequent)	CALL 780	CALL PONDER	CONNECT PONDER	telnet ponder.csci.unt.edu
UNT Libraries' on-line card catalog	CALL 3000	CALL LIBRARY	CONNECT LIBRARY	telnet library.unt.edu

To exit from the local phone lines, press <ESCAPE><RETURN>, type DONE (at the # prompt), press <RETURN><RETURN>. To exit from the metro lines, press <CTRL-SHIFT-6>, type DISCONNECT (at the UNTMODEMS> prompt), press <RETURN>. Exiting from telnet or TN3270 is dependent upon the package. CUTCP uses <ALT-X>.

HOURS FOR UNIVERSITY OF NORTH TEXAS COMPUTER ACCESS AREAS : Spring 1994

Day of Week	Willis	BA	ISB 110	Chilton 255	Chilton 116	GAB	Matthews	Music	Terrill, Wooten	ISB 205C	ISB I/O Area (138A)	Lab Locations
Monday-Thursday	Open 24 hrs.	8 am-11:45 pm	7:30 am-MN	8 am-10 pm	8 am-10 pm	8 am-MN	7 am-10 pm	8 am-10 pm	8 am-MN	MW: 10 am-8 pm TT: Noon-10 pm	Open 24 hrs.	☉ BA: 330, 332 ☉ Chilton: 255, 116 [Adaptive Lab] ☉ GAB: 330, 550 ☉ ISB: 110, 205C — graduate students only ☉ Matthews: 309 ☉ Music: 1007 ☉ Terrill: 247 ☉ Willis: 134 ☉ Wooten: 120
Friday	Open 24 hrs.	8 am-8 pm	7:30 am-9 pm	8 am-5 pm	8 am-5 pm	8 am-5 pm	8 am-5 pm	8 am-5 pm	8 am-5 pm	1-4 pm	Open 24 hrs.	
Saturday	Open 24 hrs.	8 am-8 pm	9 am-9 pm	10 am-5 pm	10 am-5 pm	2-8 pm	10 am-5 pm	10 am-5 pm	Closed	10 am-5 pm	Open 24 hrs.	
Sunday	Open 24 hrs.	Noon-11:45 pm	1 pm-MN	1-10 pm	1-10 pm	2 pm-MN	1-10 pm	1-10 pm	2-8 pm	1-8 pm	Noon-MN	

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Four things are required of the researcher who wishes to use a computer for data analysis. These requirements are hierarchical in nature:

- ❶ The researcher must know the research questions (s)he wants answered and the methods necessary to get the answers.
- ❷ (S)he must have the data that will provide the answers.
- ❸ (S)he must have the programs to analyze the data.
- ❹ (S)he must have the instructions so that the computer can use the programs.

Indeed, the ability of the computer to perform, rapidly and accurately, complex series of large amounts of data has radically transformed research methods in many disciplines, especially in the social and behavioral sciences. Routinely, sociologists and political scientists analyze the characteristics of thousands of survey or census respondents; psychologists and educators set up intricate, multifactor experimental designs; and economists and business researchers model the behavior of complicated economic processes. Statistical methods such as factor analysis, which involves hours of computation when performed by hand or with the aid of a calculator, can be done with a computer in minutes, or even seconds. The computer also offers researchers in the physical, military and social sciences the ability to simulate the effects of experimental conditions which would be impossible or undesirable to produce in "the real world."

Four things are required of the computer user who wishes to take advantage of these abilities for research. First, the researcher must have adequate knowledge of the research design he intends to employ and the statistical procedures needed to answer the research questions or test the hypotheses generated by the design. Second, the researcher must have some sort of data to be analyzed. This data might be of the characteristics of subjects, text of documents to be content-analyzed, attributes of nations or economies to be modeled, or the outcomes of experiments in the physical or biological sciences. Whatever its type, it must obviously be collected before the computer analysis is run, and the researcher must be thoroughly familiar with the format and characteristics of the data. Third, a researcher who wishes to perform statistical analyses must have access to the appropriate package of statistical programs for the analysis of the data. If the type of analysis desired is not available as part of a package, the researcher must be able to write, or have someone else write, the programs necessary to do the job. Finally, the user of a statistical package or other computer program must be able to write the job control language (JCL) that instructs the computer in the processing of the package or the program [all data analysis was done on an IBM-compatible mainframe at this time — Ed.]. Thus, these requirements are hierarchical in nature: the researcher must know the research questions he wants answered and the methods necessary to get the answers; he must have the data that will provide the answers; he must have the programs to analyze the data; and he must have the instructions so that the computer can use the programs. ■

Using UNIX for Research

By Marc St.-Gil, UNIX/VAX System Manager (mstgil@unt.edu)

The first version of UNIX was written in 1969 by Ken Thompson of AT&T Bell Laboratories. Thompson and his colleagues developed UNIX to prove that it was possible to build an operating system that provided a more productive environment for computer science research. They far exceeded that initial modest goal.

The functionality and power of UNIX quickly made it the operating system of choice for many university and other scientific environments. Because AT&T was willing to distribute the UNIX source code to other vendors and members of the scientific community, it soon became widely available on many different hardware platforms. It became the first truly portable operating system. In the computer science community UNIX became the standard against which all other operating systems were measured.

During the initial decade of its use, many refinements and enhancements were made to UNIX by various research groups as well as commercial vendors. This resulted in many versions of the operating system, each with slightly different characteristics.

Perhaps the most well known of these later modifications of UNIX is the version developed at UC Berkeley. This version of UNIX (called BSD UNIX) included a visual text editor written by Bill Joy who later went on to become a founder of SUN Microsystems. It also included support for communication protocols (TCP/IP) that became the standard for communicating on the Internet.

Although many different flavors of UNIX were developed it still remained (and still is) one of the most portable

operating systems. This means that software written on one machine running UNIX can easily be transported and run on another machine running UNIX (even another version of UNIX). As a result, much more research oriented software was written and continues to be written for UNIX.

Recently, a strong trend has developed to unify the various version of UNIX through a set of standards. As this trend continues it will make UNIX even more portable. It has also made UNIX easier to use. Most importantly this trend to standardization has made UNIX more widely accepted and used in the commercial world.

For example, it is not unusual today to find UNIX supporting critical applications in the banking industry that originally were done on mainframe proprietary operating systems. Here at UNT, our ID card system and voice registration system are supported by the UNIX operating system.

UNT researchers have a choice of three operating systems on our large multi-user host machines — VM/CMS, UNIX, and VAX/VMS. Whenever possible, we encourage the use of the UNIX operating system for research applications.

Why Use UNIX?

There are several reasons why we encourage UNIX use for research at UNT:

- Because UNIX is widely available on many different machines, the resulting competition among hardware vendors has meant we can get hardware to support UNIX at a much cheaper price than hardware running a proprietary operating system like our VAX system running VMS.
- It is easy to move applications from one UNIX machine to another. This makes it easier to share applications with colleagues at other universities.

- As the popularity of UNIX continues to grow, the amount of software available for UNIX also continues to increase while the costs continue to go down.
- Many high-end compute-intensive software applications have been optimized to run under UNIX.

Sol and Jove

Academic Computing Services Department maintains two Solbourne UNIX platforms. *Sol* is dedicated to research uses and has 4 Series6 processors. *Jove* is for general access and has 2 Series5E processors.

Both systems are largely identical except that Sol has more disk, memory, and CPU power. Sol also has a some research oriented applications that are not available on Jove such as SAS, Gaussian, Mathematica, IMSL Mathematics and Statistics Libraries, Allegro Common Lisp, and the Center for Research in Security Prices datasets.

Both systems support Internet E-mail connections; Internet/USENET News readers; telnet, ftp, Gopher, archie, and Mosaic/WWW clients. Both systems are accessible from both metro and local Denton dial-up modems, although Courier HST users do not currently have high speed access to Jove.

If your campus office only has Sytek access then you will not be able to access Jove, but there are fewer of those offices every day.

UNIX-based Research at UNT

Below is a short summary of some of the different kinds of research being done using UNIX based tools around UNT. If you have other examples, please let us know.

- **Network Neuroscience** — The Center for Network Neuroscience is pursuing research in mammalian

central nervous systems and is using a Masscomp 5700, *Nervous*, running a realtime version of the UNIX operating system to monitor as many as 64 sites in a living neural network. This information is being used to investigate the behaviour of neurons in living neural networks and also to simulate these neural networks using advanced computer systems. A Sun SPARCstation is used for data analyzation and visualization of neural network models. Contact Dr. Guenter Gross for more information.

- **Chemistry** — The Department of Chemistry is doing research in Thermodynamics and Rates of Reaction of molecules using Quantum Mechanics to calculate Molecular Energy Levels, Structures, and Vibrational Properties. The results are used to estimate the outcome of physical experiments as well as to refine theories. The practical results are used in processes like the generation of Silicon wafers used in computer chip production. Software used for these purposes are the Gaussian92 and GAMESS packages installed on Sol. For more information or permission to access and use the Gaussian software, contact Dr. Paul Marshall.
- **Computer Sciences** — The Department of Computer Sciences is doing research in various areas of Computer Theory. On their Sequent, *Ponder*, there is research being performed on Parallel Processing, Signal Processing, Image Processing, and Data Compression. On their Intel HyperCubes, *Hyper1* and *Hyper2*, more Parallel Processing research is being carried out. Dr. Renka is performing numerically intensive research calculations on his HP9000 "Snake" system, *Gauss*.
- **Economics** — The Department of Economics is Analyzing Expenditure Data constructed from Consumer Expenditures Surveys (which

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are also used to generate the now familiar Consumer Price Index) to determine the affects of rising healthcare costs on the low income elderly. Researchers are using SAS on Sol and PCs. Contact Dr. Rose Rubin for more information.

- **Geography** — The Department of Geography in collaboration with the Institute of Applied Sciences is conducting research in Ecological Modeling and more specifically Landscape Scale Forest Dynamics. Researchers are using US Army Corp. of Engineers' GRASS software and custom FORTRAN77 programs on their Sun SPARCstation 2, *Ecomod*, to study MOSAIC and ZELIG models of forest dynamics. For more information contact Dr. Miguel Acevedo.

- **Applied Sciences** — The Institute of Applied Sciences is conducting research in Spatial Analyses including Digital Remote Sensing and Geographical Information Systems on their Sun SPARCstation 2, *Pearl*, on *Sol* using ARC/Info, GRASS, and ERDAS as well as custom C and FORTRAN77 applications.

The Institute currently has 1 Sun SPARCstation 2 and several PCs in their Geographical Information Systems Lab but a new lab is in the final stages of preparation that will have 10 486 class PCs using X Window System software for Imaging Applications based on their Sun and the Computing Center's Solbourne research platform. Also rumor has it that they may be adding or upgrading their Sun to a SPARCstation 10.

- **Physics** — The Department of Physics is doing research to simulate physical processes that currently have no analytical description. Non-Linear Chaotic Processes are simulated using custom C programs written, compiled, and run on Sun SPARCstations.

Quantum Mechanical calculations are performed using custom FORTRAN77 programs written, compiled, and run on, Sun SPARCstations and national supercomputing centers' systems, many of which also run variants of the UNIX operating system.

Molecular Energy Level calculations are being performed using the Gaussian software for which Paul Marshall of the Chemistry Department purchased a campus site license to run on our Sun and Sun compatible systems.

Data visualization and analysis is also done using the UNIX-based Sun workstations as well as UNIX based NeXT workstations. The Computational Physics Laboratory is located in GAB 213 and is managed by George Trefan. This lab contains 3 Sun SPARCstations (models 10, 2, and IPX), 2 NCD Xterminals, and 3 NeXT/PCs.

The Department of Physics, in collaboration with the Center for Materials Characterization & the Department of Engineering Technology, is conducting state-of-the-art Atomic & Molecular Physics Experiments to collect data and analyze Atomic & Sub-Atomic (Electrons, Ions, Photons) Particles. Data collection and electronic experiment control are done using custom software and hardware attached to 2 HP9000 model 320 computers and data analyzation is done using Mathematica, HP BASIC, HP FORTRAN, and HP C on their HP9000 model 382 system. ■

The Importance of Regression-Discontinuity in Educational Research and Evaluation

By Randall E. Schumacker, Ph.D.,
Educational Research, Department of
Technology and Cognition

The regression-discontinuity design (RD) is a powerful methodological alternative to quasi-experimental or randomized experiments when conducting an evaluation of educational programs. Thistlethwaite and Campbell (1960) first proposed the regression-discontinuity approach to avoid problems inherent in ex post facto experiments requiring matching to equate experimental and control groups due to differential regression toward the mean or incomplete matching because of failure to identify or include relevant variables. The RD design is also appropriate in research settings where the investigator was unable to randomly assign subjects to experimental and control groups. Bottenberg and Ward (1963) further described the regression-discontinuity approach as a special form of regression analysis involving two mutually exclusive groups.

The regression-discontinuity design is a member of a larger group of quasi-experimental designs commonly referred to as pretest-posttest designs. A basic type of regression-discontinuity design requires a preprogram measure, a post program measure, and a measure that describes the assignment status of the persons (received program or did not receive the program). The regression-discontinuity design is distinguished from the other pretest-posttest designs by its assignment strategy. Basically, all persons are assigned to a program or comparison group on the basis of a *cutoff score* on the preprogram measure. Persons scoring on one side are assigned to the program while persons

scoring on the other side are assigned to the comparison group. The regression-discontinuity design is very useful when researching programs or procedures that are given on the basis of need or merit. The postprogram measure reflects the effect of the program or procedure (Trochim, 1984; Posavac & Carey, 1989).

Several states are faced with setting standards and establishing cutoff scores for determining school accountability and performance. District-wide educational programs often use the same test for pre and post testing, use different tests, or a composite of several tests as a preprogram measure (multiple criteria), with a different measure as the posttest. The RD design would be appropriate in these types of settings, however, it has not been as widely accepted or used as one would expect in educational research and evaluation. Why?

Campbell (1969) in evaluating the effectiveness of social programs felt that the political setting affected the use of RD designs in program evaluations. McNeil (1984) also cited several reasons for the possible lack of RD design use: practice, student placement in programs, potential for negative gains, and the political climate. In state and local evaluation projects, evaluation specialists tend to conform to accepted methodological practices. The use of the RD design may require more changes in practice than individuals are willing to accept. Placement of students in certain programs can also be a cause for concern. The selection procedure employed in RD designs doesn't skip students with lower abilities for program inclusion, hence it may not serve the interest of the school district. From a statistical point of view, negative gains can occur in RD designs as a result of the restrictive range of scores, for example NCE scores, which force lower correlations between pre and post measures within the program and comparison groups. The political climate and audience (school boards) can also make explaining the results diffi-

cult, especially when school districts object to testing nonprogram students.

Today, many federally funded projects require an evaluation component, and therefore, educational research and evaluation specialists should become familiar with this design. The regression-discontinuity design is a viable approach for assessing program improvement, especially since research indicates that measurement error in the preprogram measure doesn't affect program effectiveness outcome differences (Cappelleri et al., 1991; Trochim et al., 1991). The selection of a cutoff point however is an important issue to consider. The accuracy in cutoff score determination is important because it relates to the effect that assignment of individuals to groups has upon program effectiveness outcomes (Mills et al., 1991; Geisinger, 1991). In this regard, it would also be important to report the standard error of measurement around the cut-off score. Cut-off score placement can also affect whether significant differences are indicated when using the Johnson-Neyman technique (Pohmann, 1993). Additionally, the use of multiple criteria, rather than a single preprogram measure, can better substantiate reliable preprogram assessment strategy. The focus of this paper, therefore, is to provide an overview of the regression-discontinuity design, analysis, and interpretation.

Regression-Discontinuity Example

The regression-discontinuity design is useful in determining whether postprogram differences exist between a program group and a comparison group. The difference between the program and comparison group regression lines is tested at a *cutoff point*. The difference between regression lines at the cutoff point is tested for significance against the null hypothesis, $H_0: \beta_1 = 0$.

Statistical Formulae

The basic regression-discontinuity equation can be expressed as:

$Y_{\text{post}} = b_0 + b_1 Z + b_2 X_{\text{pre}} + \epsilon$, where: Y = outcome variable (post program measure); Z = assignment variable (dummy coded; 1=program/0=comparison); X = identification variable (preprogram measure); ϵ = error vector; and b_0 , b_1 , and b_2 = estimated sample regression weights.

The basic formulae for calculating sample regression weights are:

$\beta_1 = (r_{yz} - r_{yx} r_{xz}) / (1 - r_{xz}^2)$; $\beta_2 = (r_{yx} - r_{yz} r_{xz}) / (1 - r_{xz}^2)$, or, $b_1 = \beta_1 (s_y / s_z)$; and $b_2 = \beta_2 (s_y / s_x)$ (Pedhazur, 1982, 54-56). The multiple correlation squared value is then computed as:

$$R^2 = \beta_1 r_{yz} + \beta_2 r_{yx}.$$

Heuristic Data Example

A simulated data set has been generated by the SPSS-PC program to illustrate the basic regression-discontinuity design (Appendix; Trochim, 1984). The assignment to program and comparison groups, variable Z , was based on a cutoff score using an identification variable, X . The outcome variable, Y , was a score indicating the effect of each student's participation or nonparticipation in a program. The simulation program in the Appendix generated 500 pre- and posttest scores with a "true" score of 50. Error was then added to pre- and posttest scores. In addition, posttest scores for only program participants received a 10 point program effect. The cutoff score was subtracted from each pretest score creating a new variable, $NEWX$, which when included in the analysis set $b_2 = 0$ and resulted in $b_0 = \bar{Y}_{\text{control}}$ with $b_1 = \bar{Y}_{\text{program}} - \bar{Y}_{\text{control}}$ (program effect). In the simulation program, $b_0 = 50$; $b_1 = 10$; and $b_2 = 0$. The simulated data means, standard deviations, and correlations for a sample size of 500 is in Table 1. Table 2 contains the simulated data pretest and posttest

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means and standard deviations by group. Table 3 indicates the results of the simulated data regression-discontinuity analysis. A scatterplot of the Y values (postprogram measure) with the X values (preprogram measure) is in Figure 1.

Table 1: Simulated data means, standard deviations, and correlations (n = 500).

Correlations	X	Y	Z
X	1.00		
Y	.78**	1.00	
Z	.79**	.98**	1.00
Mean	50.00	55.13	.50
SD	1.00	5.19	.50

Note: 1-tailed significance: ** = .001.

Table 2: Simulated data pretest and posttest means and standard deviations by group.

Group	Mean	SD
<u>Comparison</u> (n = 249):		
Pretest	49.17	.57
Posttest	50.01	.94
<u>Program</u> (n = 251):		
Pretest	50.82	.65
Posttest	60.20	.98

Interpretation of RD Results

Assumptions generally specified in conducting regression-discontinuity analysis are: (a) no misassignment due to cutoff selection and placement; (b) statistical model correctly specified (linear, quadratic, cubic, etc.); (c) sample size sufficient to estimate regression lines; (d) both groups (program and comparison) have a common pretest measure or weighted set of pretest measures; and (e) all program subjects received the same amount of treatment intervention or instruction, for example, coursework credit hours.

The simulated data analysis indicated the significant 10 point program effect as expected ($b_1 = 10.22$ for Z - assignment variable). This regression weight remained within the 95 % confidence interval of the true value, 10, using the standard error of the regression weight value. The intercept term, b_0 , reflected the "true score" set at 50 for the sample ($b_0 = 49.99$).

The statistical hypothesis, $H_a: \beta_1 \neq 0$ is tested for significance against the null hypothesis, $H_0: \beta_1 = 0$. Therefore, the magnitude of the regression weight directly relates to the amount of gain or loss in the postprogram measure. In the regression-discontinuity design example, b_1 is the parameter that indicates a treatment effect or whether interpretation leads to a finding that the program was effective. If $b_1 = 0$, there is no treatment effect; when b_1 is positive, the program had a beneficial effect; and when b_1 is negative, the program had a negative effect.

An effect size (Glass, et al., 1981) can be readily computed as $\Delta_{E-C} = \bar{X}_E - \bar{X}_C / SD_C$. In this heuristic data example, the mean of the program group was 60.20 and the mean of the comparison group was 50.01 with a standard deviation of .94. The calculated effect size approximates the true effect size of 10. The magnitude of the effect size should not be interpreted as "small," "moderate," or "large," rather it should be a

comparative value relative to what is typically expected as program gains (Glass, et al, 1981, 104).

Conclusion and Recommendations

The program effect or the mean difference between the program and comparison group equals the value of the regression weight, b_1 . An effect size, if interpreted relative to typical program gains or from a baseline measure, adds an important dimension to interpreting results. The location of the cutoff score adds another important dimension to the interpretation of b_1 . Various cutoff values could be used to determine what effect it might have on future program effects. A high adjusted R^2 value should indicate the best cutoff score location that maximizes program effects or differences.

Which cutoff score maximized the program effect difference between comparison and program participants in the heuristic example? It was the cutoff score at the "true" score value of 50 that reflected the "true" program difference. The specific issues surrounding the cutoff score are: (1) selection of the cutoff score; (2) the placement of the cutoff score; and (3) adherence to a cutoff criterion. Although these issues impact the RD design results, they are subjective and political in nature.

The term "fuzzy" is sometimes used when a strict adherence to a cutoff criterion is not met. The term "fuzzy" concerns itself with the lack of a completely known criteria for assignment of subjects to groups. In our example, a specific cutoff score was set and assumed some application of a judgmental standard setting method, although these methods in and of themselves are controversial (Mills, et al., 1991; Geisinger, 1991).

Table 3: Simulated data regression-discontinuity analysis.

Variable	b	SE _b
Z	10.22	.14
NEWX	-.01	.06
Intercept	49.99	.08

Note: $R^2 = .96$

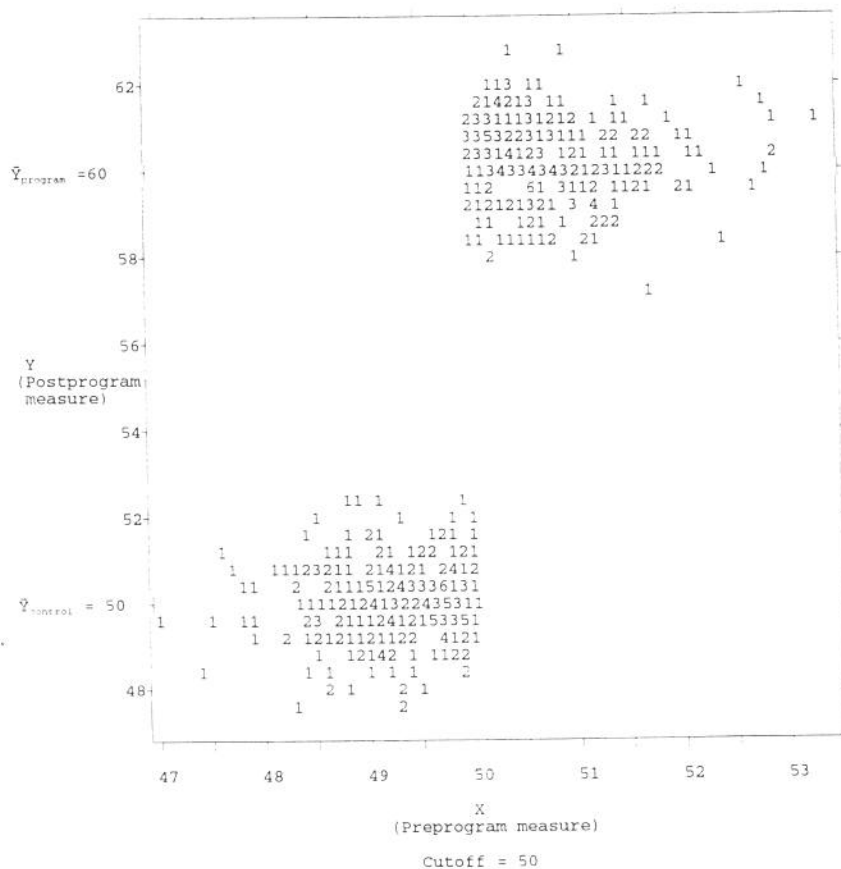


Figure 1: ScatterPlot of Y with X.

Other issues that might affect regression-discontinuity results that warrant further investigation are: posttest score reliability, assessment of predictive validity, and the use of multiple pre and posttest measures. It might even be plausible for multiple pre and/or post test measures in the RD design to be combined using a confirmatory factor analysis technique to create a pretest Factor comprised of multiple pretest variables and a posttest Factor comprised of multiple posttest variables. The equation would then be: $F_{\text{post}} = b_0 + b_1 F_{\text{pre}} + b_2 Z + e$, where: F_{post} = factor score of individual i based on multiple Y variables; F_{pre} = factor score of individual i based on multiple X variables; Z = group assignment based upon cutoff score on F_{pre} ; e = error vector; and b_0, b_1, b_2 = sample regression estimates. The regression equation using factor scores would allow the use of multiple measures which decreases measurement error.

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Appendix: SPSS-PC Simulation Program and RD Analysis

A. PRETEST SET TO TRUE SCORE VALUE

DATA LIST FREEFIELD / ID.

* Calculate true score and error for pre- and posttests.

COMPUTE TRUE = 50.
COMPUTE XERROR = NORMAL(1).
COMPUTE YERROR = NORMAL(1).

* Calculate pretest scores with error.

COMPUTE X = TRUE + XERROR.

* Assign subjects to groups based on pretest score.

IF (X LT 50) Z = 0.
IF (X GE 50) Z = 1.

* Calculate post scores with 10 point effect for program subjects.

COMPUTE Y = TRUE + YERROR + (10 * Z).

* Calculate new pretest score with value of zero at cutoff point.

COMPUTE NEWX = X - 50.

BEGIN DATA.

<Enter numbers 1 - 500 in freefield format here>

END DATA.
CORRELATION X Y Z / STATISTICS = 1.
PLOT PLOT = X WITH Y.
MEANS TABLES = X Y BY Z.
REGRESSION VARIABLES = Y NEWX Z/
DEPENDENT = Y /
METHOD = ENTER. ■

Using SPSS at UNT

By James Yarbrough, ACS Statistical Consultant (james@unt.edu)

There are a variety of options available for faculty, staff, and students who wish to use SPSS at the University of North Texas. SPSS is available in many formats from most network servers on campus, and you may also have SPSS loaded onto individual computers. The various platforms for SPSS include SPSS/PC+, SPSS for Windows, SPSS for the Macintosh, and SPSS for use on CMS or OS/MVS (previously referred to as SPSS-X). If you are interested in using one of these platforms from your network account and it is not currently available, contact your network supervisor to request that it be added. Introductory handouts discussing the use of SPSS on each platform are available from Academic Computing Services located at ISB 119. Short Courses concerning the use of each SPSS package are also offered by Academic Computing Services during the early part of each semester. Contact Academic Computing Services at 565-2324 for more information on Short Courses.

The SPSS modules available for each platform are as follows:

Platform	Modules
SPSS/PC+ (v 5.1)	Base, Stat., Adv. Stat., Graphics, Trends, Tables, Categories
SPSS for Macintosh (v 4.0.4)	Base, Stat., Adv. Stat.
SPSS for Windows (v 6.0)	Base, Stat., Adv. Stat., Graphics, QC Chart
SPSS for CMS, OS/MVS (v 4.0.1)	Base, Stat., Adv. Stat., Lisrel

Graphics for SPSS/PC+ requires an interface with an external graphics package such as Microsoft Charts or Harvard Graphics. SPSS for Windows, on the other hand, has full graphic capability built in. If you plan to make extensive use of graphics and do not have access to an external graphics package, you should consider using SPSS for Windows. The graphic package included with SPSS for Windows includes a wide variety of graphical possibilities and is actually quite easy to use.

Of course, SPSS for Windows can only be invoked from within Microsoft Windows. It is only available on those servers that offer Windows and can only be used on individual personal computers that have Windows installed.

As mentioned above, you may request that a version of SPSS be installed on an individual computer. Faculty and staff may install a package on office or home computers while students may only install a package on an on-campus (University owned) computer. Where possible, it is recommended that individuals make use of SPSS programs available on the network servers. If you do wish to obtain a copy of some version of SPSS for an individual PC, bring formatted high-density 3.5" diskettes to Statistical Support at Academic Computing Services, ISB 119. SPSS/PC+ and SPSS for Windows each require 10 diskettes. SPSS for Macintosh requires only 7 diskettes.

As is evident from the above listed modules for each platform, Lisrel is only available on SPSS for CMS or OS/MVS. The OS/MVS platform is also necessary in situations in which one is attempting to access data that is stored in the UNT tape library or on the mainframe storage disk. SPSS for CMS or OS/MVS also facilitates work with

extremely large data sets and complex analyses that demand extensive amounts of memory and storage space. SPSS for Windows is also useful when memory and storage requirements are large as it is only limited by the memory and hard disk space of the particular computer with which you are working. Hence, if your machine has 8 meg of memory and 200 meg available hard disk space, these become the limits of SPSS for Windows on that machine. ■

A Guide to SAS Product Availability

By Phanit Laosirirat, ACS Statistical Consultant (phanit@acs.unt.edu)

The new SAS academic license agreement has simplified the availability of its products. The new license has also provided more products in DOS, Windows, OS/2, and UNIX at a lower cost. UNT Academic Computing Services now has nearly all the current SAS products on these four platforms. A particularly interesting product is the *SAS/Tutor*: Fundamentals of the SAS system, which is an on-line computer based training software. It is available on-line on the UNIX platform.

A new DATASOURCE procedure in the *SAS/ETS* product can extract time series data from many different kinds of data files distributed by various vendors. The data files currently supported by the DATASOURCE procedure include CRSP, IMF, COMPUSTAT, CITIBASE, BEA, and BLS. The DATASOURCE procedure is in place now on an experimental basis under the SAS 6.07 system for CMS. Full support of the procedure will be available once SAS 6.09 for CMS is installed.

According to a recent company announcement, by Summer 1994, SAS Institute Inc. will ship the upgraded version of the Windows and the OS/2 2.1 platforms. The new releases, Ver-

sion 6.10, will add SAS/Image, an image-processing application to the *SAS/GRAPH* module, and SAS/English, an English-language query tool, as well as *SAS/GIS*, the company's geographical information system.

In addition to the dBASE and the DIF file formats that are currently supported, the SAS 6.10 for Windows and OS/2 will be able to read the Lotus 1-2-3 and Microsoft Excel file formats into a SAS data set. This is welcome news for most users that use these spreadsheet programs as a data entering tool.

All these new features will be available to the qualified SAS users as soon as we receive the products. Under the new license agreement, SAS 6.04 for DOS will be available to students who enroll in a class that uses the software for class projects. The other PC platforms will only be available to qualified users including full-time faculty and staff members. Please contact Academic Computing Services for further information at (817) 565-2324. The following table lists the current SAS products that are available from Academic Computing Services.

SAS Software Products	Platforms					
	Personal Computer			Academic Mainframe		UNIX
	PC	Windows	OS/2	MVS	CMS	SunOS
SAS/BASE	6.04	6.08	6.08	6.07	6.07	6.09
SAS/STAT	6.04	6.08	6.08	6.07	6.07	6.09
SAS/ETS	6.04	6.08	6.08	N/A	6.07	6.09
SAS/FSP	6.04	6.08	6.08	N/A	N/A	6.09
SAS/GRAPH	6.04	6.08	6.08	N/A	N/A	6.09
SAS/IML	6.04	6.08	6.08	N/A	6.07	6.09
SAS/OR	6.04	6.08	6.08	N/A	6.07	6.09
SAS/AF	6.04	6.08	6.08	N/A	N/A	6.09
SAS/QC	6.04	6.08	6.08	N/A	N/A	6.09
SAS/ASSIST	6.04	6.08	6.08	N/A	N/A	6.09
SAS/CONNECT	N/A	6.08	6.08	N/A	N/A	6.09
SAS/INSIGHT	N/A	6.08	6.08	N/A	N/A	6.09
SAS/EIS	N/A	6.08	6.08	N/A	N/A	6.09
SAS/ENGLISH	N/A	N/A	6.08	N/A	N/A	6.09
SAS/LAB	N/A	6.08	6.08	N/A	N/A	6.09
SAS/ACCESS	N/A	6.08	6.08	N/A	N/A	6.09
SAS/CALC	N/A	6.08	6.08	N/A	N/A	6.09
SAS/TUTOR	N/A	N/A	6.08	N/A	N/A	6.09

Please see SAS on page 12.

SUGI is Coming

By Dr. Panu Sittiwong, Research and Statistical Support Manager (panu@unt.edu)

The SAS Users Group International Annual Conference will take place between April 10-13, 1994 at the Loews Anatole Hotel in Dallas. The conference typically draws about 3,000 SAS users from around the world. In addition to a formal paper presentation, the conference provides attendees with various other activities including:

- ☐ Hands-on Workshops on various SAS applications.
- ☐ A chance to discuss with SAS Inc. consultants and technical support people on your problem. I used this service in the previous conference and found out that this is a chance to pick the brain of SAS Inc.
- ☐ A demonstration of various new SAS products under development. In fact, SAS institute will use the open session, which it is hosting, to announce a new direction and the things that will come in the next year.
- ☐ SAS Institute Training Classes. Additional fees ranging from \$300.00 to about \$500.00 per class are required to attend these classes.
- ☐ Birds of a Feather sessions which bring SAS users with similar interests together. Sessions are held every day during the conference and the topics are open. It is a chance to meet and exchange ideas with other SAS users who share similar ideas. For those of you who are readers of SAS-L, this is a chance to match faces with names.

Registration fees were \$100.00 for academic attendees, \$40.00 for students, if paid before March 14, 1994. It costs \$25.00 more now. You can pick up the registration form from the Computing Center, ISB 119. More information is available by calling (919) 677-8000 and ask for SUGI information. ■

SAS continued from page 11.

Software Products	Applications
SAS/BASE	Data access, management, analysis, and presentation: the foundation of the SAS system.
SAS/STAT	Full-function statistical analysis.
SAS/ETS	Time series analysis, forecasting, econometrics, and business planning.
SAS/FSP	Customized data entry, retrieval, and letter writing.
SAS/GRAPH	High-resolution graphics.
SAS/IML	Matrix programming.
SAS/OR	Operations research and project management.
SAS/AF	Applications development facilities.
SAS/QC	Quality improvement.
SAS/ASSIST	The SAS System's task-oriented, menu-driven interface.
SAS/CONNECT	Cooperative and distributed processing.
SAS/INSIGHT	Interactive statistical graphics.
SAS/EIS	Menu-driven <i>Executive Information System</i> development tool.
SAS/ENGLISH	Portable natural language interface for querying and reporting.
SAS/LAB	Interactive guidance-driven analysis.
SAS/ACCESS	Transparent interfaces to other database products and files: dBase I-IV, ORACLE, DB2, AS/400 Data, ADABASE, SYSTEM 2000, INGRES, SYSDBASE and SQL Server.
SAS/CALC	Electronic spreadsheet.
SAS/TUTOR	Library of on-line training courses for the SAS System.

Using Secondary Data Sources for Your Thesis and Dissertation.

By Dr. Panu Sittiwong, Research and Statistical Support Manager (panu@unt.edu)

When preparing your prospectus for your thesis or dissertation, you may want to keep in mind some publicly available secondary data sources. You may be able to use these data to supplement your primary data source or as the main data source for your study.

The UNT Computing Center has hundreds of machine-readable data available to all students and faculty members. These data are acquired from several sources includ-

ing the Inter-university Consortium for Political and Social Research (ICPSR), Department of Labor, Center for Research in Security Prices (CRSP), Standard and Poor (COMPUSTAT), etc.

☐ **CRSP Data:** Once a year UNT will receive data from the Center for Research in Security Prices. The data include:

- Monthly NYSE and AMEX Returns and Master file;
- Daily NYSE and AMEX Returns file;
- Daily NASDAQ Returns and Master file;
- Daily, Monthly, Quarterly, and Annual Markets Indices file; and
- National Market System Securities file.

☐ **COMPUSTAT II Data:** Similar to CRSP data, UNT will receive once a year updated COMPUSTAT II data from Standard and Poors. The current holdings include:

- Annual Primary, Supplementary, and Tertiary (Industrial and Research) file;
- Annual Over-the-Counter file;
- Annual Bank file; and
- Annual Price, Dividends and Earnings file.

In addition, we are in the process of acquiring some quarterly data.

☐ **ICPSR Data:** Data from the ICPSR constitute the majority of data archives at UNT. Currently, there are more than 200 data titles available locally at UNT. As a member of the Consortium, UNT students and faculty members can request any data made available from the ICPSR. Data available from the ICPSR cover a wide range of subjects and disciplines including public opinion surveys, election studies — in the US and foreign countries, Congressional Roll Calls, the General Social

Survey, health interview surveys, consumer expenditure surveys, government finance, world economic indicators, population surveys, censuses of the US and foreign countries, EURO-BAROMETER, etc.

You can search the Gopher system for information on the ICPSR data that are available at UNT (see the related article in the November/December issue of *Benchmarks*, p. 17). If the data that you need is not available at UNT, you can request the data by contacting Panu Sittiwong at ext. 2324, or by sending electronic mail to either PANU on CMS or AC09 on MUSIC. It may take up to 4 weeks before the data can be accessed after it is ordered from ICPSR.

- **Data from Other Sources:** In addition to those public data sources, you can acquire data by yourself. The Computing Center can handle data on various mediums. If you plan to acquire secondary data sources by yourself, you may want to consult with an Academic Computing Services consultant concerning the best method and medium available to store your data. ■

LOOK!

Customized Short Courses Available

Faculty members can request "customized" short courses for their classes. Contact ACS to request a course (565-2324, ISB 119). ■



Sending SPSS and SAS System Files Over the Internet

By Dr. Panu Sittiwong, Research and Statistical Support Manager (panu@unt.edu)

The extensive availability of the Internet network and its speed in transferring files from one site to another makes it possible to send data files over the network. Raw data files can be sent easily without much preparation. System specific data files such as those that were created by SAS and SPSS require some preprocessing before they can be sent. This article will outline the steps that are required if you want to send those datasets through the Internet.

Since both SAS and SPSS system data files were created to be used only on the same operating system on which they were created, they are not useful on other systems. In order to move these datasets to another operating system, you will need to copy the data into a transport or export format. The export format data file contains instructions — which are understood by all computer operating systems — on how to create the attached data file into the system file for that particular operating system.

At UNT, SAS software is available for DOS, Windows, OS/2, UNIX, CMS, and OS/MVS operating environments (see the article on page 10 of this issue for more information). The following programs show the SAS statements that will create an export data format.

SAS/PC

```
Libname PORT SASV5XPT 'd:\filename.ext';
```

*d:\filename.ext is DOS filename including Drive name and directory name;
*d:\path is drivename and directory name;

```
Libname SASPCFIL 'd:\path';  
Proc Copy in=SASPCFIL out=PORT;  
Select filename;
```

*filename is DOS filename which contain SAS dataset that you want to copy to export format;

SAS for UNIX, Windows, and OS/2.

```
Libname PORT XPORT 'd:\filename.ext';
```

*d:\filename.ext is filename including Drive name and directory name;
*d:\path is directory name;

```
Libname SASPCFIL 'd:\path';
```

```
Proc Copy in=SASPCFIL out=PORT;  
Select filename;
```

*filename is DOS filename which contain SAS dataset that you want to copy to export format;

SAS for MVS

```
//idnnSAS JOB (idnn,2,10,9999),'Your Name',PASSWORD=mvssp  
/*JOBPARM CARDS=99999  
// EXEC SAS  
//PORT DD SYSOUT=B  
Libname SASFILE 'USER.idnn.xxxxxxxx' UNIT=SYSDA VOL=SER=ACADnn  
DISP=SHR;  
Libname PORT XPORT;  
Proc Copy in=SASFILE out=PORT;  
Select name
```

Where: USER.idnn.xxxxxxxx is MVS Dataset name.
ACADnn is a DASD volume name.
name is a SAS member name.

After the job is done, you can copy the export file to your minidisk from the J2 Browse screen.

SAS for CMS

```
Libname PORT XPORT 'filename filetype filemode';
Libname SASFILE 'A';
Proc copy in=SASFILE out=PORT;
select name;
```

SPSS/PC+

```
Get file = 'd:\filename.ext'.
Export outfile = 'd:\filename.ext'.          *d:\path is a drive name and a directory name;
```

Where: d:\filename.ext is DOS file name including drive name and directory name.

SPSS for MVS

```
//idnnSAS JOB (idnn,2,10,9999), 'Your Name', PASSWORD=mvssp
/*JOBPARM CARDS=99999
// EXEC SPSSX
//SPSSFILE DD DSN=USER.idnn.xxxxxxxx, UNIT=SYSDA,
VOL=SER=ACADnn, DISP=SHR
//PORT DD SYSOUT=B
Get file = SPSSFILE
Export outfile = PORT
```

Where: USER.idnn.xxxxxxxx is MVS Dataset name.
ACADnn is a DASD volume name.

SPSS for CMS

```
Get file = 'filename filetype *'.
Export outfile = 'filename filetype filemode'.
```

Step by Step Process

- ① Create and run the appropriate program above.
- ② The program will create an export datafile. In PC, CMS, and UNIX environments, the file will be named whatever you specify. In the MVS environment, the file will be in punch format. You can copy this file from the J2 queue to your minidisk with the command **COPY filename filetype filemode**.
- ③ You can send this file on the Internet using any mail program. When using the CMS operating system, however, you must transfer this file using the **SENDFILE** command. This command must be issued after the **TCPIP** command.

You can transfer this file using the FTP program also. SPSS export files may be sent as a regular text file (ASCII mode). SAS export files, however, must be transferred using binary mode. ■

Temporary Disk Usage Guidelines

By Dr. Philip Baczewski, Assistant Director of Academic Computing (ac12@unt.edu)

Recently we have been experiencing shortages of available temporary disk space because of several users holding large allocations of temporary space on an ongoing basis. In order to provide equitable access to temporary disk space for all CMS users who need it, the following guidelines are offered.

Allocate only as much temporary disk space as you need. If you have a specific data file to store, try to estimate or measure its size as accurately as possible and allocate a suitable amount of cylinders to store that data.

Release the temporary disk space when you are not using it. Once the need for the temporary storage has passed, enter a **REL nnn** (DET command to release and detach the temporary disk, where nnn is the disk address (e.g. 194). The disk will also be released and detached when you terminate your CMS session with a **LOGOFF** command.

If you find you need less temporary disk space than estimated, create a new smaller disk and copy the information to the new disk and release and detach the original temporary disk.

Computing Center staff reserves the right to release and detach any temporary disk over 25 cylinders which contains no files and is associated with a disconnected and idle CMS User-ID.

These guidelines will be formed into a formal policy in the coming months and published with the Academic Computing Policies and Procedures document. We urge all CMS users who need temporary disk space to be judicious in their allocation of such storage in the meantime. ■

The Network Connection

By Dr. Philip Baczewski, Assistant Director,
Academic Computing Services and BITNET INFOREP (ac12@unt.edu).

*This column is a continuing feature of **Benchmarks** intended to present news and information on various aspects of wide area networks.*

Finding Electronic Mailing Lists

*The following information is compiled from columns which appeared originally in the May 1990, March 1992, and November 1992 issues of **Benchmarks**.*

Introducing Electronic Mailing Lists

In recent years, the words "mailing list" have taken on a most negative connotation in relation to the U.S. mails. Unlike their surface mail counterparts, wide area network mailing lists carry quite positive connotations. Mailing lists allow you to establish communication with groups of people in the U.S. and around the world who share your same interest in a particular subject. Mailing lists can ensure the delivery of electronic magazines and other materials on general or special topics. Best of all, you choose the network mailing lists on which you will be included. Like their surface mail counterparts, however, network mailing lists can make trips to your electronic mailbox rather overwhelming if the selection and use of those lists is not well managed. Included here are a few tips which will, hopefully, make your use of mailing lists as effective and enjoyable as possible.

Finding Mailing Lists

Perhaps the first question about mailing lists is, "How do I find out what's out there?" The most popular electronic mailing list software used on BITNET and the Internet is a program named **LISTSERV**. One way to find out what lists are maintained on **LISTSERVs** is to send the command **LIST GLOBAL** to the nearest **LISTSERV** installation (in UNT's case, **LISTSERV@VM.RICE.EDU**). To do so, you can address an electronic mail message to **listserv@vm.rice.edu**, and include the command **LIST GLOBAL** as the first and only line of the message. One word of warning, however: this command will generate and send to you a file which is over 4500 lines long. The lists are in alphabetical order, so if you are looking for the location of a list, this file can be very helpful. If, however, you are looking for mailing lists on your particular field of study, it could take a while to scan over 4500 entries. (A relatively recent version of this listing is maintained on CMS at UNT in the file **LISTSERV LISTS.D**.)

To narrow the search a bit, you can qualify the search command with a substring which will be used to match values in the list name and description. The form of the command is as follows: **LIST GLOBAL /string**, where you replace "string" with your specific search value. If you wish to search for several related words, you can have multiple commands in the same mail message, as long as you have only one **LIST** command per line.

There is an alternative source for BITNET and Internet mailing lists and discussion groups. Diane Kovacs, of the Kent State University Libraries, has compiled a directory of electronic mailing lists and newsgroups and has recently released a

fourth revision. The directory is actually a set of files which can be acquired from **LISTSERV@KENTVM**. BITNET and via anonymous FTP from **KSUVXA.KENT.EDU** (in the Library directory). (These files are currently available at UNT on the CMS D disk.)

The files which make up the directory are as follows:

- **ACADLIST README** (explanatory notes for the Directory with an index)
- **ACADLIST FILE1** (Anthropology-Education)
- **ACADLIST FILE2** (Futurology-Latin American Studies)
- **ACADLIST FILE3** (Library and Information Science-Music)
- **ACADLIST FILE4** (Political Science-Writing)
- **ACADLIST FILE5** (biological sciences)
- **ACADLIST FILE6** (physical sciences)
- **ACADLIST FILE7** (business and general academia)
- **ACADLIST CHANGES** (all the major additions, deletions and alterations)

The organization of lists and news groups by subject allows easy access to those on one particular field of study. This is a obviously a valuable service to the Wide Area Network community of scholars.

Another similar very useful directory is one of electronic journals, compiled by Michael Strangelove at the University of Ottawa and available from **LISTSERV@UOTTAWA.BITNET** as well as **LISTSERV@BROWNVN**. BITNET. It consists of two files, **EJOURNAL1 DIRECTORY** and **EJOURNAL2 DIRECTORY** (also available at UNT on the CMS D disk), with entries organized by category of publication (journal, newsletter, digest, etc.). Each entry has the journal title, ISSN number (if any), a description,

General Information

subscription information, submission information, related electronic mailing lists (if any), back issue information, and a contact name and address.

To retrieve any of these files from a LISTSERV you can send a mail message with the command:

SENDME filename

where you substitute the name of the file you want for "filename." The file will be sent to you as a mail message.

Finding Electronic Mailing Lists Via a Database Search

The LISTSERV at NDSUVM1 maintains a service which allows you to search for a particular keyword in text bases of BITNET and Internet mailing list information. The following is an example database search. Lines like these can be sent as a mail message to the address LISTSERV@NDSUVM1.BITNET:

```
//DBlook JOB Echo=No
Database Search DD=Rules
(f=mail
//Rules DD *
Select MEDIA in lists
Index
Select MEDIA in intgroup
Index
Select MEDIA in new-list
Index
```

In the above example, all items which contain the string "MEDIA" would be listed. The LISTSERV will process your request and send you a mail message which contains the output of your search. The information returned should be enough to allow you to subscribe to a particular mailing list.

To illustrate, some sample output from the above search example which used "MEDIA" as the keyword is shown to the right.

List of the Month

Each month we will highlight one BITNET, Internet, or USENET Special Interest Group (SIG) mailing list. This month's list...

Blake Online via blake-request@albion.com

Owner: Seth T. Ross seth@albion.com

Albion Books is pleased to announce the launch of Blake Online, an electronic conference/mailling list dedicated to the life & work of William Blake (1757-1827), English artist, poet & mystic. Topics may include anything of interest to Blakeans, including:

- * commentary & criticism
- * contemporary influences
- * announcements of events & publications
- * pointers to other Blake resources, both online & book-bound
- * efforts to digitize & "re-illuminate" Blake's work

Blake Online is unmoderated & open to the networking public.

To subscribe, send E-mail to blake-request@albion.com with the following command in the "SUBJECT:" field:

subscribe Firstname Lastname ■

```
> Select media in lists
- Database LISTS, 41 hits.
```

```
> Index
Ref# Listname Nodename #Sub List title
-----
0005 MEDIA-L BINGVMB 400 Media in Education
0735 ANIME-L VTVM1 84 Japanese animedia and other anima-
tion news.
...
```

```
> Select media in intgroup
- Database INTGROUP, 41 hits.
```

```
> Index
Item # Date Time Recs Subject
-----
000014 91/10/15 12:04 45 ACSOFT-L%WUVM.D.BIT-
NET@CUNYVM.CUNY.EDU
000046 91/10/15 12:04 17 aon@POLYSLO.CALPOLY.EDU
...
```

```
Select media in new-list
- Database NEW-LIST, 48 hits.
```

General Information

```
> Index
Item #   Date   Time   Recs   Subject
-----
000052 89/04/19 17:37   47   NEW LIST: EMUSIC-L or EMUSIC-D -
Electronic Music
000066 89/05/25 08:52   35   NEW LIST: Film-L Film Making and
Reviews
...
```

You can notice that there are three sections, one corresponding to each search request you made. You can subscribe to the BITNET LISTSERV mailing lists by sending the command **SUB <listname> <your name>** to the nearest LISTSERV installation (in UNT's case **LISTSERV@VM.RICE.EDU**).

In the case of the third search above, with a little more work on your part there is additional information that can be retrieved from **LISTSERV@NDSUVM1.BITNET**. The items actually refer to postings from the NEW-LIST mailing list which is maintained on that LISTSERV. You can send for a log file containing the particular message based upon the information returned by the database search. To do so, send the following command as the first line of a mail message to **LISTSERV@NDSUVM1.BITNET**:

SEND NEW-LIST LOGyymm

where instead of the letters "yymm" you substitute the corresponding month and year found in the "Date" column of the database search output. Note that logs are available only for searches on the NEW-LIST Database.

For more information on LISTSERV database searches see the file **LISTSERV DBMEMO** on the CMS D disk. You can also send for this file from the closest LISTSERV installation by using the command **SEND LISTDB MEMO**.

Understanding Mailing List References

Once you have a mailing list description, the next step is to subscribe. When examining a mailing list reference, make note of the following information:

- ☐ **Subscription address** — in the case of LISTSERV facilities, subscription commands can be sent to the particular LISTSERV installation that maintains the list or to the closest LISTSERV installation.
- ☐ **List format** — some mailing lists "broadcast" all messages sent to it, while on others, a list moderator places the messages into digest form before they are sent to you. Digest mailing lists usually generate much less mail traffic than their "undigested" counterparts.
- ☐ **List distribution** — One piece of information available is the various LISTSERVs at which a particular list is maintained. In general, the more sites at which a list is maintained, the more popular that list is, and therefore, the more mail traffic it will generate.
- ☐ **List moderator** — Most list descriptions include the name of the moderator and the moderator's network mailing address. Whether you subscribe to a list or not, the moderator can sometimes be helpful in providing additional information about that list, or suggesting alternate sources of information.

Once you absorb the above information, accessing network mailing lists can be quite simple. You may find, however, that managing all the mail generated from those lists can get to be a bit complex. Whenever possible, you should take advantage of a USENET news reading program, which provides access to many electronic discus-

sion groups, including some LISTSERV mailing lists. From a newsreader you can read and reply to these messages as if you had your own subscription.

Electronic mailing lists make frequent and speedy communication possible in a way which would not be available through surface mail. Efficient management of list mail can make your use of that resource more effective. ■

Going Somewhere? Read This First

If you're graduating or will be off-campus and away from your computer accounts during the semester break or this summer, **PLEASE** remember to unsubscribe to any electronic mailing lists that you may be on. If you're graduating or otherwise leaving the University, electronic mail and LISTSERV files will continue to arrive until your User-ID is deleted, which could be months later. This puts an unnecessary load on the storage facilities of the computer systems where you receive your mail. It is also extremely irritating to the people who manage the LISTSERVs, who will eventually get return messages stating that mail was undeliverable to you.

So . . . be nice: If don't plan on reading your electronic mail for a week or more, send a message like the following (you can always resubscribe when you return):

BITNET Lists On VM/CMS:

- To **suspend mail** on a specific list:
TELL LISTSERV@location SET listname NOMAIL
- To **sign off a specific** list:
TELL LISTSERV SIGNOFF listname
- To **sign off all** lists:

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TELL LISTSERV SIGNOFF *
(NETWIDE)

BITNET Lists On VAX/VMS:

Use the same commands as above, substituting the word **SEND** for **TELL**.

To Get Back on the BITNET Lists:

Use the **TELL** or **SEND** command, as illustrated above, with the command **SUBSCRIBE listname your_name**. **Note:** You will need to do this for each individual list you want to subscribe to.

If you suspended your mail, send the same message you sent before, but substitute the word **MAIL** for **NOMAIL**.

Internet LISTSERVS

Internet LISTSERVS are similar to BITNET LISTSERVS but they do not use all of the same commands, just enough to keep you confused.

To suspend your mail, you should send a mail message to the LISTSERV with the following text:

set listname mail postpone

To get back on a list send a message to the list stating:

set listname mail ack

If you want to get off a list, just send the following, in a mail message to the LISTSERV:

SIGNOFF listname ■

Window on Texas Government Accessible Via Telnet

The popular Texas Government BBS is now accessible via Telnet. Just type **telnet window.texas.gov** from any host that has Telnet and you will be able to take advantage of all the neat features of that service. More information about this BBS can be found on page 19 of the January/February 1994 issue of *Benchmarks*. ■

New Standard Form on the 2680A Laser Printers

By Dr. Philip Baczewski, Assistant Director, Academic Computing Services (ac12@unt.edu).

In an effort to save paper, time, and money, the default form for jobs printed on the Remote4 (ISB) or Remote1 (BA) laser printers, from either the Academic MVS or CMS systems, is now LP2X (since January 17, 1994). LP2X prints two reduced standard print images, one above the other, on an 8.5 x 11 inch portrait page. By printing two logical pages per physical page, we save paper by halving the number of sheets required, we save time because the printer will also be printing half the number of physical pages, and of course, if we cut the amount of paper being used, the University will also save money.

Occasionally you may need to print your output with the more standard form of one page per page (or with any other form supported by the mainframe laser printers). You can override the default by using the **SPOOL** command on CMS or by specifying a form on your MVS job statement in your program's JCL.

The CMS command to set the printer output to standard form is:

SPOOL E FORM LP1X

To override the default form on your MVS job statement, use the format:

```
//jobname JOB (idnn,:01,1,,LP1X),{remainder of statement}
```

where 'jobname' is the first four characters of your CMS User-ID followed by up to 4 optional characters and 'idnn' is the first four characters of your MVS User-ID.

If you have any questions in regard to the above information, you can talk to an Academic Mainframe Consultant in ISB 119 (or call 565-2324). ■



News From the CWIS/Gopher Hole

By Mark Thacker, CWIS Coordinator (thacker@unt.edu)

This column covers features and resources available through the University's Gopher Campus Wide Information System (CWIS). Gopher is available on various UNT host computers including the VAX, Sol, and Jove. It is also available in the General Access Labs and on various Novell file servers around campus.

New HGopher Windows Gopher Client

For a long time now, I have heard people complain of there not being an MS Windows Gopher Client available — well no more! I will be distributing HGopher, a WINSOCK-compatible Windows Gopher client by the time that you

General Information

read this. HGopher was written by Marty Hampson (hence "Hampson's Gopher" or "HGopher").

What Is Required?

HGopher uses the now standard WIN-SOCK interface that allows you to run multiple TCP/IP based programs at once (like a USENET news reader, HGopher, a Telnet session etc.). You can run either packet driver (traditional), Novell's ODI with the ODIPKT shim or Novell's LAN Workplace (running on top of ODI) interfaces. I will have information about WINSOCK implementations for all of these systems. The program requires Windows 3.1, but should run in standard mode fine.

Where Do I Get It?

I will be distributing HGopher plus a variety of viewers for graphic and sound files through the Network Manager's Mailing Lists as well as to the General Access Lab Managers. If you need a copy, check with your network manager first. If all else fails, please call me and I will send you a copy or direct you to where you can get one.

New Gopher Highlights

As mentioned in the last issue of *Benchmarks*, there is now a dedicated area on our Gopher tree to highlight new or useful Gopher information on the Internet. Remember, the links to these Gopher servers are removed when I prepare for the next issue of *Benchmarks*, so make sure to place bookmarks to them if you want to return to them later. These listings are located at:

Remote Information & Resources on the Internet/ Gophers in This Month's Benchmarks

Each Gopher server mentioned here is described in the original text of the

author, with some editing for brevity. Take a seat folks; this list is long!

- **Gopher Jewels** — Gopher Jewels is a catalog of gopher sites by category (subject tree). Two new categories have been added:

Manufacturing
Museums, Exhibits and Special Collections

Point your gopher to:

Type=1
Name=Gopher Jewels
Path=1/Other_Gophers_and_Information_Resources/Gophers_by_Subject/
Gopher_Jewels
Host=cwis.usc.edu
Port=70
URL: gopher://cwis.usc.edu:70/11/Other_Gophers_and_Information_Resources/
Gophers_by_Subject/Gopher_Jewels

Reproduction of Gopher Jewels is permitted with appropriate credits given to the researcher:

David Riggins
Texas Department of Commerce
Office of Advanced Technology
Austin, Texas 78711
512/320-9561

david.riggins@tpoint.com (NOTE: This is a new address affective 2/12)
david.riggins@tpis.cactus.org (current address)

- **LEGI-SLATE Gopher Service** — Legi-Slate, Inc. is pleased to announce its new LEGI-SLATE Gopher Service available on the Internet. The current version is a prototype for a complete, dynamically updated LEGI-SLATE Gopher Service scheduled for release July 1, 1994. The prototype contains information about sample bills and resolutions from the current Congress and "Federal Register" documents from 1993.

Please send comments and questions to:

LEGISLATE@MUDHONEY.MICRO.UMN.EDU

LEGI-SLATE is the original and leading on-line service covering Congress and Federal Regulations.

777 North Capitol Street, Washington, D.C. 20002
(202) 898-2300 1-800-733-1131 Fax (202) 898-3030

- **Tech Talk On-line College Newspapers** — As of Feb. 1, I have established on a gopher server the beginning of a central site for pointers to on-line college and university newspapers. To contact the server directly, point your gopher to blick.journ.latech.edu

To make contact through the gopher hierarchy, go through the following sequence of directories (or folders): North America - USA - Louisiana - Louisiana Tech University - Tech Talk.

In either case, open the Tech Talk directory and you will find the directory for on-line college newspapers. Papers are grouped by states. Contents for any newspaper are whatever the people at that site have made available.

At the moment, the number of papers is limited. The server contains files from the following institutions:

- San Jose State U.
- U. of Illinois
- U. of Minnesota
- U. of Chicago
- U. of Waterloo
- Bucknell U.

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◦ Memphis State U.

◦ U. of Texas.

If you have comments or questions, please contact me. Eddie Blick, News Bureau, Journalism Department, Louisiana Tech University Internet: blick@vm.cc.latech.edu Bitnet: blick@latech FAX: 318-257-4558 Phone: 318-257-4427

- **US Government Manual & Industrial Outlook '94** — The University of Michigan Documents Center would like to announce the posting of two government resources on the University Library Gopher:

The US Government Manual 1993/94 — For information on file problems, structure, and use, read the UMich About file and the FBB announcement file.

The Commerce Department's Industrial Outlook 1994 — For content information, read the UMich "about" file and the "program description" file.

For further information, contact Jan Zauha, Assistant Librarian, Documents and Data Support, University of Michigan. Telephone: (313)764-0410; e-mail: janz@umich.edu

- **IPCT Journal** — Interpersonal Computing and Technology: An Electronic Journal for the 21st Century.

The publisher and editors of "IPCT: An Electronic Journal for the 21st Century" are pleased to announce that IPCT Journal, including all back issues, is available via gopher from GUVM.CCF.GEORGETOWN.EDU (or 141.161.71.1). Point your gopher to this location (port 70) and select from the top menu, "LISTSERV maintained Files and Notelogs/."

Alternatively, coming in via Gopher menus, from "Other Gopher Sites" or "International Gopher Networks," follow the menus down: North America/USA/Washington D.C./Georgetown University/Information Systems/Listserv maintained Files and Notelogs. (Note: The IPCT-L Discussion List Notelogs can be found here, too.)

This new option for accessing IPCT Journal will not affect any person already subscribed to IPCT-L or IPCT-J. Anyone can, if preferred, subscribe to the IPCT-J@GUVM.GEORGETOWN.EDU list and receive the Journal via LISTSERV distribution. (See instructions below.) The next issue (v2 n1) will be published later this month.

Articles in IPCT Journal are full length (10-20 pages with notes and bibliography) done in APA format. Published articles have been rigorously peer-reviewed and include, but are not limited to, the following topics: use of electronic networks in the classroom, electronic publishing, use of electronic networks and information exchange, library applications of electronic communication, professional relationships carried on via electronic communication, use of electronic communication in higher education, business, industry and government, and related topics. Articles may have a humanistic or social science cast. Technological articles are considered to the extent that they are intelligible to the bulk of the readers and are not specific to any particular hardware configuration.

Articles can be submitted to the Editor-in-Chief, Gerald Phillips, GMP3@PSUVM.BITNET or gmp3@psuvm.psu.edu (Internet).

- **Almost 2001: The NBC Scripts** — Folks at NBC are graciously providing the WELLgopher with daily scripts from the Almost 2001 series. You can find them, after gophering to gopher.well.sf.ca.us, under: Communications -> Almost 2001: an NBC series on the communications revolution

Here's the link entry:

Name=Almost 2001: an NBC series on the communications revolution

Type=1

Port=70

Path=/Communications/2001

Host=gopher.well.sf.ca.us

Eric S. Theise <verve@well.sf.ca.us>

P.O. Box 460177

San Francisco, CA 94146.0177

Internet Domain Editor

Millennium Whole Earth Catalog

The WELL: Internet, matrix, & news conference host + gophermeister

- **Kevin's World** — I'd like to announce a new gopher server called "Kevin's World," located at "Skynet.Usask.CA," port 70.

Unlike most announcements here, this gopher isn't really dedicated to any particular purpose. I'm not a library, or a geophysical data center, or a University CWIS or a government agency. It's not even that official and could be gone tomorrow.

I just got tired of wading through all the levels of menus to get to the stuff I found interesting. I decided to use the OS/2 server to organize the links for my OS/2 client in a way I like. If anyone else wants to join in, then fine.

However, it DOES have one unique feature. To me, the information on gophers is very interesting, but the actual use of the gopher is quite boring. Enter this menu, pick that menu, read this policy and use document, ad infinitum. I decided to liven it up a bit.

Kevin's world is set up like a town. You get connected to main street. Currently it has a thriving community, full of businesses (on Wall street), schools (on College drive), nightclubs, restaurants, and art galleries (on Broadway), civic clubs, hobby clubs, hospitals, a train station (to link to other gophers), etc.

There's even a payphone. Unfortunately, since you can't put a quarter in over the Net, you can only call up directory assistance (which hooks into X500 services).

Part of the fun is walking around town, and bumping into people.

General Information

There's places like the "Denizens of Doom Chop Shop" where the bikers hang out. The nightclub has Steven Wright as a comedian, who says a different joke every time you ask him. The coffee shop has a fortune teller that tells different fortunes. The town has a mosque and synagogue, an art gallery, (and could even have a strip bar, but I'm not brave enough to make the links). There's even the "right" and "wrong" side of the tracks. (Kevin's house is on the wrong side, with all the bikers.)

The end result is a cross between an information service, and an adventure game. I plan to use it in our Computing Services course on resources available through the Internet, to show how diverse the information is out there, and to make the course more fun.

Everyone is welcome to join.— Kevin Lowey (Kevin.Lowey@USask.CA, Client Services Training Team)

- **Voice of America** — The Voice of America's international News and English Broadcasts radio newswire is now available via anonymous FTP and the Internet Gopher, along with a variety of other information from VOA and Worldnet Television.

The News and English Broadcasts wire service includes the texts, in English, of radio reports prepared by VOA staff correspondents, contract news reporters ("stringers"), and feature and documentary writers. The wire provides a comprehensive daily report of news events, worldwide. It is one of the core news products of the Voice of America, and is used as the basis for much of VOA's programming in all languages. The public Internet server is updated within a few minutes of the issuance of each report by the VOA central news department; a seven-day archive of the wire is available on the public server.

In accordance with U.S. law, program materials such as the News and English Broadcasts newswire are provided exclusively for recipients outside the United States.

Selected VOA and Worldnet program schedules, shortwave radio frequency and satellite downlink information, public announcements from the Voice of America and Worldnet, and technical documents on international radio and television broadcasting are also available on the public Internet server.

All the materials on the server are available by anonymous FTP and the Internet Gopher. Schedules and other general information materials may also be requested via electronic mail; the News and English Broadcasts newswire is not available via E-mail because its contents change so rapidly.

The Voice of America and Worldnet are, respectively, the international radio and television networks of the United States Information Agency, and operate out of headquarters in Washington, D.C. VOA has news bureaus in many major world cities.

Link Info:

Type=1+
Name=Voice of America and Worldnet Television
Path=
Host=gopher.voa.gov
Port=70
Admin=VOA Computer Services Division, +1-202-619-2020 <postmaster@VOA.GOV>

Electronic Mail Access — Address: info@voa.gov

To request E-mailed instructions on how to use the server, send a message with the contents "send help" to the above address.

To request E-mailed instructions on how to use the server plus an index of available files, send a message with the contents "send index" to the above address.— Chris Kern (ck@voa.gov) (uunet!voa3!ck) (+1 202-619-2020).

- **ASCII Clipart** — Gopher Server: Texas Tech University - Department of Computer Science, Lubbock, Texas.

We have a large collection of ASCII Clipart (hundreds) organized neatly into categories. If you find an ASCII picture that is not in this collection, please send it to me and I will add it along with a note of credit for the sender and artist.

ASCII CLIPART MENU LOCATION
- Art and Images - ClipArt (ASCII)

In addition, we also have a large collection of TIFF Clipart, Graphic Images, and Sounds collected from many other gophers on the Internet. Lots of other interesting stuff also.

Type=1
Name=Texas Tech University, Computer Sciences (SpICE Of LiFe)
Path=
Host=cs4sun.cs.ttu.edu
Port=70
URL: gopher://cs4sun.cs.ttu.edu:70/1

Abdul Malik E-mail: gripe@cs4sun.cs.ttu.edu Lubbock, Tx USA

- **Welch Medical Library** — The William H. Welch Medical Library has released a new biomedical gopher, the Welch Medical Library Gopher. The team that has developed this gopher is taking a somewhat non-traditional approach to organizing its menus selecting a task organization. We would be very interested in hearing other developers thoughts about this design scheme.

The idea is that users connecting to the gopher commonly have a task in mind. For instance, they want to find research supporting resources, or they want to check up on the

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news, or they are looking for information on patient care.

On behalf of the Welch gopher development team I invite you to take a look at our gopher. It can be accessed by gophering to welchlink.welch.jhu.edu. Specific comments can be sent to myself or general discussion of the task-based organization might be of interest to the list.

Karla Hahn
Internet Services Librarian
Welch Medical Library
Johns Hopkins University
khahn@welchlink.welch.jhu.edu

- ❑ **Online World Gopher** — The Online World shareware book's information files are available from the CoSN gopher (gopher.cosn.org). The pointer is:

Name=The Online World - Odd de Presno
Type=1
Port=70
Path=1/Networking Information/Reference/The Online World - Odd de Presno
Host=digital.cosn.org

Thanks, Odd de Presno. Return E-mail address: opresno@extern.uio.no

- ❑ **Oak Ridge National Laboratory** — The Oak Ridge National Laboratory (ORNL) Environmental Sciences Division (ESD) proudly announces the availability of its gopher and WorldWide Web servers to the Global Internet. These servers have been established to provide the public with information about ORNL and ESD research and develop activities. Any comments or suggestions are welcome and appreciated. Our gopher server is running on port 70 on host jupiter.esd.ornl.gov (128.219.24.6). The URL for our WWW server is <http://jupiter.esd.ornl.gov/>. Send comments, suggestions, questions, etc. to webmaster@jupiter.esd.ornl.gov.

- ❑ **Norwegian Research Centre in Organization & Management** — We are glad to know that many of you have shown interest to our following Gopher Server. This Gopher Server contains information about the Centre's publications, its staff, and research programs.

Name=Norwegian Research Centre in Organization and Management
Type=1
Port=70
Path=1
Host=gopher.los.uib.no

We welcome any comments or suggestions for additional information that you may wish to see posted. Address comments, questions, or concerns to Sarwar Khan@los.uib.no

- ❑ **ECHO Database Host** - We are pleased to announce a new service to Gopher users. The well-known ECHO-host in Luxembourg, financed by the European Communities, provides access to some databases which contain lots of information on European research and technologie. There are two different types of bases, the CORDIS-databases, which are only open to users of the university of Paderborn (Germany) and ECHO-bases, which are publically available. You can try the latter ones with a Gopher-Access to:

Type=1
Name=Gopher-Gateway - ECHO Databases
Path=echosearch
Host=gopher.uni-paderborn.de
Port=4324

Comments, error reports and further suggestions are welcome to elmar@uni-paderborn.de

- ❑ **Information Infrastructure Task Force** — The following is a follow up to a short item that appeared in the Dec. 21, 1993 issue of *EDUPAGE*:

Superhighway Bulletin Board. The White House Information Infrastructure Task Force has set up a "superhighway" bulletin board designed to give the public access to schedules, committee reports, and minutes of task force meetings. It will also include documents on the creation of the NII. For information on access call 202-482-1835. (BNA Daily Report for Executives 12/17/93 A5)

- ❑ **Agricultural Genome Gopher** - The Agricultural Genome Gopher and World Wide Web servers are now available. Almost all of the data is from the USDA Plant Genome Program although the first newsletter of the Animal Genome Program is also available.

The essentials: Gopher: host - probe.nalusda.gov port - 70

[For those of you who can't access their gopher client from a command line you can get there by going to the Great Gopher at the University of Minnesota and then: Other Gopher and Information Servers -> All the Gopher Servers in the World-> Agricultural Genome Gopher]

Details: As stated above, almost all of the information contained on these servers is from the USDA Plant Genome Program. This includes information about maps, loci, probes, references, germplasm, and related data. Species currently included in the database are soybean, maize, Arabidopsis, Pinus spp., and small grains in the Triticeae. Rice and solanaceous crops are coming soon and work has begun on cotton and sorghum. Also included is a subset of the AGRICOLA bibliographic database produced here at the National Agricultural Library. The subset includes records pertaining to plant genetics and breeding, and abstracts for many articles are included. The genome and AGRICOLA data has been indexed with WAISindex and therefore is full-text searchable.

General Information

More Information: See the README files in the various directories for more information. Also, questions about the database or the Plant Genome Program can be addressed to pgenome@nslusda.gov, or you may call 301-504-6613 (Beltsville, Maryland, USA).

Doug Bigwood
Database Manager
National Agricultural Library
U.S. Department of Agriculture
10301 Baltimore Blvd.
Beltsville, MD 20705

- **National Library of Medicine** - The National Library of Medicine (NLM), which is part of the National Institutes of Health, is pleased to announce that information is now available via gopher. The NLM gopher server can be reached at: gopher.nlm.nih.gov on port 70.

The National Library of Medicine's Gopher contains information about the Library and selected reference materials. It also provides access to Locator, NLM's on-line catalog system, and to MEDLARS and TOXNET (for those with access codes). Please note that the NLM Gopher does not provide direct access to the contents of journal articles or books. Articles and books in the NLM collection may be ob-

tained on interlibrary loan through a local or academic library.

The NLM is the world's largest research library in a single scientific and professional field. The Library's computer-based MEDLARS system was established to achieve rapid bibliographic access to NLM's vast store of biomedical information. The Lister Hill National Center for Biomedical Communications and the National Center for Biotechnology Information are research and development divisions within NLM. The Extramural Programs Division of NLM provides a broad variety of grants to support research and development activities leading to the better management, dissemination, and use of biomedical knowledge.

Since September 1992, the NLM has been the site of the National Coordination Office of the multi-agency High Performance Computing and Communications initiative. Dr. Donald Lindberg serves concurrently as Director of the NLM and Director of the National Coordination Office for High Performance Computing and Communications.

Comments and questions may be directed to: admin@gopher.nlm.nih.gov ■

Computing Center; Jim Curry, Microcomputer Maintenance Shop; Paul Gandel, Computing Center; Richard Harris, Computing Center; Coy Hoggard, Computing Center.

January 18, 1994 Meeting

Reports

Chairman von Dran reported that he had taken the IRC's recommendation regarding the Auditorium Building to the Steering Committee, and it was accepted. Mr. Pole agreed to take the building out of the plans for renovation.

Paul Gandel reported that he and Don Grose have written a statement regarding the use of Netnews, which he presented for approval of the IRC. The statement is as follows:

Access to Netnews and other Internet resources are made available through University facilities and should be used in accordance with University policies and procedures.

A motion to accept the statement was passed; the Chair will now take it to Richard Rafes for his review.

IRC Goals and Objectives

Richard Harris introduced the Preliminary Goals and Objectives of the IRC Program Groups and distributed the drafts. He explained that the purpose of having the Program Groups prepare these goals and objectives is to provide them for the University Planning Council in lieu of the Computing Center writing them. Each of the Program Groups have met and reviewed the Goals and Objectives submitted in the Strategic Plan that was submitted to the DIR. Today this council has a chance to go over them, and when approved they will be forwarded to the IRC Steering Committee and then to the UPC to be folded into the overall University planning process. Harris stressed that when the Planning Groups work on the strategies to go along with these goals and objectives,



Information Resources Council News

Minutes provided by Sue Harrison, Recording Secretary

IRC Regular Voting Members: Ray von Dran, Library and Information Sciences (Chair); Cengiz Capan, College of Business; Carolyn Cunningham, Student Affairs; Paul Dworak, College of Music; Brian Forsman, TCOM Information Resources Council; Chuck Fuller, Fiscal Affairs; Juliet Getty, School of Merchandising and Hospitality Management; Larry Gleeson, School of Visual Arts; Don Grose, Libraries; David Hartman, School of Community Services; Monica Holmes, Graduate Student Council; Sam Magill, TCOM Director of Information Technology Services; Steve Miller, Administrative Affairs; Tom Newell, Telecommunications (Ex-officio); Don Palermo, Academic Administration; Jean Schaake, College of Arts and Sciences; Paul Schlieve, College of Education; John Todd, Faculty Senate; Virginia Wheelless, Associate Vice President and Director, University Planning and Institutional Research; Steve Williams, Undergraduate Student Association. **IRC Ex-officio Nonvoting Members:** Bill Buntain,

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that will be the most important phase of the planning - when we work out how we are going to accomplish these goals and objectives.

The Chair pointed out that when the Program Groups write their strategies, there is a process of describing each one that is recommended. For each strategy that will be submitted to the IRC, the following sections will need to be identified:

- Strategy Title
- Supported Goal(s) & Objective(s)
- Proposal Summary
- Capital Outlay Costs
- Long-Term Operating Costs
- Staffing Commitments (Existing & New)
- Implementation Time frame
- Potential Benefactors
- Limitations

On recommendation by Virginia Wheelless, it was agreed that the goals and objectives need to be prioritized before they are sent to the UPC. Discussion followed on each Program Group's Goals and Objectives. Several changes were made which were incorporated into a new draft of the Preliminary Goals and Objectives document.

A meeting to finalize the Goals and Objectives and put them in prioritized order was set for January 25, 1994, in the University Union, Room 418, from 2:00-4:00 p.m.

January 25, 1994 Meeting

Ray von Dran convened a working meeting of the IRC for the purpose of rating the Objectives presented at the January 18th meeting. A spreadsheet was distributed, which reflected a compilation of ratings turned in to the Chair by IRC members and Program Group conveners, and discussion followed regarding the method of rating the objec-

tives. It was stressed throughout the discussion that even though some objectives were going to be rated Medium and Low, as opposed to High, they are not to be considered "unimportant," but rather objectives that can be deferred to a later time. The group looked at each Objective individually and made several editorial changes in the statements, which were agreed upon by the group.

The Chair distributed a topical outline for use by the Program Groups in writing the strategies that support their Goals and Objectives. According to the Planning Timeline, the strategies are to be prepared by Program Groups for presentation at the February 15 IRC meeting.

February 15, 1994 Meeting

The Chair reported that the final IRC Goals and Objectives were forwarded to UPC committees and it is now the job of the Program Groups to write the strategies for those goals and objectives. He called for reports from the Program Groups on their progress:

Instruction Program Group

Paul Gandel reported that the group met briefly and came up with eight strategies which he outlined as follows:

- ① Equipping all classrooms with a minimum set of equipment such as overhead projectors, proper lighting, etc.
- ② Delivery approach for getting additional types of equipment through technology or personnel; for example, video, multimedia, support service.
- ③ Develop a scheduling system that would get classes into the rooms with the specialized equipment they might need.
- ④ Create a number of computer equipped, or technologically-

equipped classrooms for hands-on training and instruction.

- ⑤ Develop a faculty resource center where faculty can explore new technologies.
- ⑥ Facility for student-based testing on computers.
- ⑦ Increase availability of computers throughout the university as well as the metroplex by making them available in dorms and study rooms, in addition to the General Access Labs.
- ⑧ Provide support personnel to work with faculty to develop instructional programs and provide release time for faculty to work on such programs.

He also suggested a possible 9th strategy: upgrade of the academic main-frame to support instruction.

Research Program Group

Marc St.-Gil outlined several tentative strategies, as follows:

- ① Provide a key-word searchable, network accessible information base of abstracts of grant proposals in a standard electronic format.
- ② Establish some form of electronic access to an inventory of systems available on campus.
- ③ Work on policy documents to implement a plan based on a five-year life cycle of research and computing resources.
- ④ Maintain the current information services, such as Gopher and FTP on various host machines.
- ⑤ Provide matching funds for collaborators.
- ⑥ Maintenance and upgrade of our network backbone.
- ⑦ Maintaining databases that provide Internet-searching methods that we already have.
- ⑧ Bring in guest speakers in projects that cross departmental boundaries.

General Information

After discussion about the lack of faculty members on this Program Group, the Council agreed that Ray von Dran should talk with the Graduate School, the Deans and the Grants office to ask for suggestions of faculty who would be interested in serving. He will appoint new members from those suggested.

Administrative Program Group

Joneel Harris distributed a draft of the group's proposed strategies. The general strategies, without the specific implementation details are as follows:

- 1 Continue to provide support for externally mandated functions as required.
- 2 Acquire or develop, implement, and support, software applications to improve customer service.
- 3 Improve support for printing and processing of reports and documents produced by both central and distributed computing systems.
- 4 Select standard platforms and increase central support for distributed and cooperative computing, primarily for growth and expansion.
- 5 Continue to investigate emerging technologies and evaluate their potential benefit for support and improvement of administrative functions.

Joneel explained that the group had deleted strategies pertaining to existing programs, since at this time the requested plans pertain to new initiatives only.

Communications Program Group

Tom Newell reported that this group has not met, but that they initially developed strategies to go with their goals and objectives. He deferred his report until the next IRC meeting.

Standards & Cooperation Program Group

Susan Pierce distributed five documents that detailed the group's proposed strategies. The general strategies are as follows:

- 1 Provide an up-to-date baseline of desktop microcomputers for all faculty and staff.
- 2 Establish a University-wide Information Resource Security Program.
- 3 Establish a baseline level of staff support for distributed computing.
- 4 Participate in selected software site license and volume purchase agreements.

Instructional Technology Committee

Ray von Dran reported that the Instructional Technology Committee is working on a task delegated by the Provost, which is to investigate the problems that have been reported with the six newly renovated large classrooms.

E-Mail Task Force

Paul Schlieve reported on the progress of the E-Mail Task Force. At its last meeting the committee began investigation of global directory services. Schlieve stated that since the Task Force began meeting there have been many changes in the E-mail environment. The Task Force will meet again and decide how to proceed.

General Access Lab Committee

Cengiz Capan reported that the General Access Lab Committee met on February 8, at which time a General Access Lab Managers' Committee recommendation was approved to buy paper for the labs that is imprinted in non repro blue ink the words "FOR USE FOR UNIVERSITY OF NORTH TEXAS

STUDENT COURSEWORK ONLY."

This will be an effort to prevent students in the labs from using the facility to print personal documents. Capan will take the recommendation before the Deans for approval before it is implemented.

The GAL Committee discussed the need for support centers and also considered a proposal to upgrade the Adaptive Lab with new equipment and furniture.

Strategic Planning Committee

Richard Harris reported that the Strategic Planning Committee met on February 9, at which time they reviewed the strategic planning timeline and discussed a format for writing strategies. Harris expressed a desire to pull the Program Groups' objectives into the University-wide objectives so that there are no separate ones, and stated his belief that each of the strategies will fit under one of the University objectives that will come out of the University Planning Council. Harris announced that Don Grose and Barry Wagner are now permanent members of the Strategic Planning Committee and that all Program Group Chairpersons are invited to attend the SPC meetings.

March 8, 1994 Meeting

E-Mail Task Force

Paul Schlieve distributed a report of the E-Mail Task Force and pointed out several action items as follows:

- 1 the Task Force recommends the use of the Netware Global Messaging system to enable LAN-based applications to exchange mail via MHS and SMTP (including WordPerfect Office 3.1 on an interim basis);

General Information

- ② the Task Force recommends support for AOCE (the Apple Open Collaboration Environment) as part of the Macintosh core operating system;
- ③ the Task Force recommends pursuit of in-house development of integrated directory services;
- ④ the Task Force recommends the implementation of a pilot project using the Interactive Mail Access Protocol (IMAP)-compliant mail system for student mail;
- ⑤ the Task Force recommends that a pilot cc:mail system be established in the Library and that issues related to the use of cc:mail and Wordperfect Office 4.0 be explored in the context of the cc:mail system in the Library and the Wordperfect Office 4.0 system in the Department of Technology and Cognition;
- ⑥ the Task Force has established a goal of the June IRC meeting for the presentation of additional strategies with respect to Wordperfect Office and cc:mail;
- ⑦ the Task Force recommends that the cc:Mail pilot project not expand beyond the Library and that the Wordperfect Office 4.0 system not expand beyond the Department of Technology and Cognition.

Paul announced that everyone who uses any mail system on this campus (with the exception of COM-LETE Mail) can send mail to and receive mail from everyone else, although it is not easy to do so at this time. The Task Force is working on making this an easier task.

Membership Clarifications

Several clarifications were made regarding membership on IRC and its committees: John Todd is the new representative from Faculty Senate; Program Groups do not have Chairs, they have Conveners, and a named representative of each program group will attend Strategic Planning Committee meetings and be the liaison to the IRC.

Technology Policy

The Chair distributed a memo from the Provost asking for input from the IRC on matters relating to Technology policy to be sent to the Coordinating Board. A meeting was set for Tuesday, March 29, 3:00 p.m., at which time the Program Group Conveners are asked to bring suggestions from their groups. Von Dran said he would find out how this new Technology Policy committee and the others that are now in existence at the state level all tie together.

Program Group Conveners presented their strategies and brief discussion followed.

Future Meetings

The Chair suggested that at the March 29th meeting a final prioritization of the strategies can be done. It was further suggested that the Program Groups meet to prioritize their own strategies under the appropriate UPC objectives and send a report to Susan Pierce by Monday, March 21 so that she can compile them into one document to bring to the IRC meeting on March 22 for review by the whole committee. A motion to approve these suggestions was passed. ■

WP User's Group 1994 Schedule

By Sandy Franklin Burke, Office Automation Specialist (burke@ccl.unt.edu)

All WordPerfect User's Group meetings continue to be held on Fridays in Chilton 255.

Following is the schedule of meetings for the remainder of spring:

- April 22, 3-4 p.m.
- May 20, 3-4 p.m. ■

IRC Meeting Schedule

The IRC generally meets on the third Tuesday of each month, from 2-4 p.m., in the Administration Building Board Room. All meetings of the IRC, its program groups, and other committees are open to all faculty, staff, and students. ■

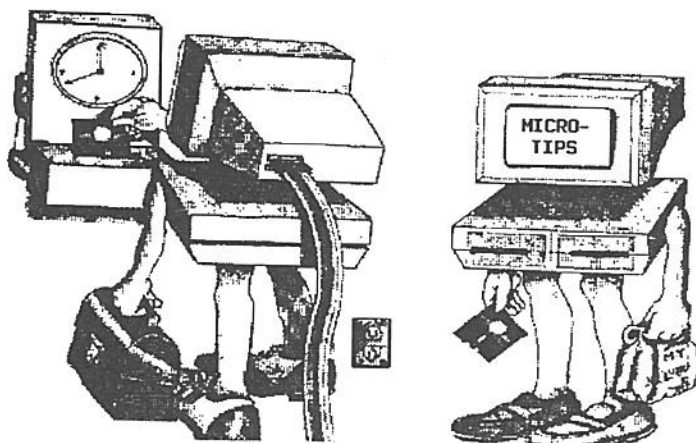
Staff Activities

Transitions

- **Panu Sittiwong**, Research and Statistical Support Manager for ACS, completed and successfully defended his dissertation this semester. You can call him *Doctor* now. His Ph.D. is in Political Science.
- **Phanit Laosirirat**, longtime statistical consultant for ACS, quit to devote his time to completing his dissertation. Phanit's doctoral work is also in Political Science.

Publications and Presentations

- **Dr. Philip Baczewski**, Assistant Director of Academic Computing, presented a paper entitled "Evaluation of Music Theory Pedagogy Strategies for Cognitive Development: A Comparison of Graduate, Undergraduate and Junior College Students' Learning Profiles," at the Texas Society for Music Theory meeting on March 4, 1994 in Beaumont, TX. Dr. Rosemary Killam, Associate Professor of Music at UNT, co-authored the paper. ■



*This column is intended to serve as a forum for sharing useful tips on making more productive use of microcomputers. If you have a tip that you feel may be of use to campus users, submit it to the **Benchmarks** Editor for possible inclusion in a future issue.*

Measurement Analysis

By Randall E. Schumacker, Ph.D., Associate Professor, Educational Research, Department of Technology and Cognition

Faculty, instructors, and teaching fellows who teach courses and evaluate student progress can now take advantage of low cost, easy-to-use software for item banking, test construction, and test item analysis. The item banking and item analysis software run on an IBM or IBM-compatible personal computer. Software features and an address to obtain the software are described.

Item Banking

Item banking serves a useful function for the storage and retrieval of test questions. It is gaining popularity among textbook publishers who now furnish a text, instructor's manual, student workbook, and an item banking software diskette. The item banking software typically contains the objectives and items for each chapter or unit of instruction.

An important aspect of item banking, inherent in the item banking software publishers provide, is that it permits the matching of items with objectives and learning levels based upon Bloom's taxonomy. This information is commonly outlined in a table of test specifications. At the university level, a course syllabus and/or a list of objectives for each unit of instruction and test period, generally serves the same purpose.

The item banking software for an IBM or compatible personal computer most often used by textbook publishers is MicroTest III. It costs \$95.00 and is available from:

Chariot Software
3659 India Street
Suite 100
San Diego, CA 92103
(619) 298-0202

The software is menu driven and contains several handy features. Over 1,000 items can be entered. Items can also be edited and previewed on screen. Several types of questions can be entered: multiple choice, true/false, matching, essay, sentence completion, and short answer. In addition, item difficulty, item linking, and a correct answer can be entered for each question. The items can be scored dichotomously (0,1) or involve Likert (multi-point) responses. Therefore survey questionnaire data can also be analyzed.

The software permits up to three different versions of the same test to be created and printed. When randomly selecting items for a test, the software prevents duplicate questions from being selected. Various print format options are also available when creating a test. An answer key for a test is also printed.

You can save the questions and answer key in a separate diskette file. This is handy, for example, if you wish to use WordPerfect or another word processing package and/or want to print on a printer which is not directly connected to your computer. The use of other word processing packages makes possible the use of graphical items, which is a limitation of the software. Questions can also be extracted from one item bank into another item bank or into an ASCII file.

Item Analysis

Item analysis provides the instructor with item and test summary information. Item information that is generally required includes item difficulty, item discrimination, percent response by option, and correct answer. Test information instructors typically require is the number of items, number of examinees, mean, standard deviation, median, internal consistency reliability, standard error of measurement, and the minimum/maximum scores. This information in conjunction with item banking is useful in determining

whether items fit the test and instructional objectives. The test information helps determine norms, reliability, and score interpretation.

Low-cost, easy-to-use item analysis software programs (ITEMAN, RASCAL, ASCAL) for an IBM or compatible personal computer are available from:

Assessment Systems Corporation
2233 University Avenue
Suite 200
St. Paul, Minnesota 55114
(612) 647-9220 Telephone
(612) 647-0412 Fax
asc@mr.net E-mail

These programs are separately priced depending upon whether the instructor desires classical true score, Rasch, or Item Response Theory analyses. I would recommend using the classical true score theory item analysis program unless you are familiar with latent trait theory and test construction. The prices for each are as follows:

- ITEMAN \$149.00 (Classical True Score)
- RASCAL \$175.00 (Rasch)
- ASCAL \$400.00 (Item Response)

The ITEMAN program and its features are easy to use and understand. The program prompts the user for an input file, output file, score file, and an exceptions file. The input file contains the students' item response scores. This file can be edited in DOS and the 4 lines of ITEMAN program code entered. The four lines of program code specify the following:

(Line 1) number of items, symbol for omitted items, symbol for not reached items, and number of columns for student ID;

(Line 2) answer key;

(Line 3) number of response options;

(Line 4) which items to include and/or items that belong on different subscales.

The output file contains the results of the item analysis, the score file contains students' scores, and the exceptions file permits you to re-analyze the data and contains information on certain item numbers and options where more than one response might be considered correct. It is handy to label these files with appropriate extensions: test1.dat; test1.out; test1.scr; and test1.exp, respectively.

The ITEMAN program is menu driven and easy to use. Items can be analyzed as a complete set or as subscales. Individual summary statistics are automatically printed for the entire set of items or each subscale. Subscale intercorrelations are even printed. The manual and examples are easy to follow and all terminology is clearly explained.

Academic Computing is providing access to the ITEMAN program which will provide a printout with all the necessary item and test information. More importantly, Data Entry has a scanner connected to a personal computer that will scan NCS student answer sheets and create an ASCII data file which can be used as the input file for ITEMAN (Call Data Entry at 565-3887 for assistance). ■

Apathy Alert

By Eriq Neale, ACS General Access Lab Manager (neale@unt.edu)

March 6 came and went this year without much hullabaloo. In fact, I completely glossed over the date without a single neuron tugging at my conscience. Many of you who read this will remember only as you read the remainder of this sentence that March 6 is the birthday of the artist Michelangelo, and the activation date of the PC virus attributed to his name. Oh yes! That March 6.

Granted, I'm glad we didn't have the media circus surrounding the activation date that we did two years ago. In fact, I only remembered the date myself from a friend making a passing comment about a news brief he had observed on March 6th. The lack of awareness about this particular date is indicative of a much larger apathy in the virus arena right now. Allow me to explain.

The Signs

The clearest indication I observed recently came from a short course I was to give about viruses. The last time it was offered, it had to be canceled because of low enrollment. If memory serves correctly, only one or two people showed interest in the topic. Granted, I'm slightly biased in my opinion that this material should be required instruction for anyone using a computer. However, given the number of viruses we continue to see on student diskettes in our computer labs at UNT, there should be a much higher level of interest than has been seen.

Recently I was asked to don my virus hunter's cap and help solve a problem that had cropped up elsewhere on campus. A particular PC had been causing trouble for some time, and someone finally discovered that it was infected. The irony of the situation is that anti-virus software existed on the computer,

UNT Statistical Software User's Group

If you are using statistical software in your work or research, this is for you. The Research and Statistical Services group of Academic Computing Services is initiating the creation of a local user's group on campus. Currently, we expect the user's group will be a forum for exchanging ideas and experiences in using statistical software, and will act as a Steering Committee in making recommendations about the availability of statistical software at UNT.

Those who are interesting in joining the user's group may contact Panu Sittiwong at ext. 2140 or send E-mail to Panu@unt.edu. We hope to have our first meeting sometime in late April. ■

but was not being used, and had not been used in quite a while. In fact, a significant sum of money was spent replacing hardware components on this PC because the virus simulated hardware problems. A number of people, including myself, relearned a valuable lesson from this incident.

That these incidents continue to occur, however, proves that this issue is not taken very seriously by a large percentage of computer users. Every few months an incident is reported involving a virus that would have been avoided if basic prevention techniques had been applied. It seems that we're

constantly educating and reeducating key support people about the virus threat to the campus.

I'll continue to do my part. I'll write articles, I'll give talks, I'll teach short courses, I'll answer E-mail and telephone questions, I'll update our anti-virus software tools, and I'll try to find better ways to educate people about viruses. I'll even continue to put on my flameproof suit and virus hunter hat to combat problems in the wild. I hope that I can encourage you to take a stand as well and begin to make virus awareness more of a proactive task than a reactive job. ■

Convergence, a New On-line Multimedia Magazine

Press Release from Glenn Peters (aenigma@netcom.com)

In the past, entertainment has been inextricably linked to the medium in which it is presented; literature was on paper, film was on celluloid. But, in this age in which a reference to film can as often as not mean videotape, the physical medium has become less and less important. Magazines are being published electronically, books are becoming interactive, and laserdiscs allow screenplays, interviews, and alternate edits of films to be accessed instantly by the user. Media itself no longer flows from artist to consumer in fixed form, but has become malleable.

□ **Mission statement:** *Convergence* is an on-line magazine devoted to entertainment in the age of the information superhighway. *Convergence* is not primarily about the hardware of the information age, but about the information itself: film, laserdisc, audio CD, CD-ROM, on-line magazines, comics, and books. Today phrases like multimedia, virtual reality, and interactive cinema are used and overused, with no clear definitions on hand. We believe strongly that such technobabble misrepresents the potential of these nascent entertainment forms. All media, from the most ancient to those still emerging deserve to be taken at face value and critiqued on artistic and sociological levels. *Convergence* will strive to provide a diverse but coherent point of view, covering everything from music to film to on-line adventure games and communities.

□ **Submissions:** *Convergence* will accept articles of the following types: reviews of any type of artistic endeavor which can be accessed by the reader (e.g. film and CD reviews but not live performances unless recorded somehow), deconstructions of the social, political and/or artistic effect of a work or type of work (e.g. "Laserdiscs and the Democratization of Film"), and essays on the past, present, and future of entertainment media. The writer should always be sure to cite sources in their article, to assure that the reader can have access to the same tools the writer used to construct their article. Insider articles by people discussing their own projects will be featured. Graphics and sounds (i.e., music samples) will be accepted for submission as long as they are either public domain or the rights for them have been secured by the submitter. In the future, we hope to be able to include moving images.

□ **Format:** *Convergence* is a completely electronic magazine published quarterly on-line, and available through io.com. We will produce it in two basic formats: a plain-text, or easily readable Setext format (plain text formatting, with customizable readers). The other format will be hypertext and multimedia which will be available both on the World Wide Web, and as a download. There will be browser programs available for Macintosh, Windows, Amiga, X Windows, and SGI platforms available as free-ware.

Submissions deadline for issue #1 will be April 15th 1994. The issue will go on-line on June 1st.

The Writer's Guide and a *Convergence* FAQ are currently in the works. Please send any questions, comments and suggestions (along with the address of the place you read this posting) to AEnigma@Netcom.com on the Internet or 76620,2713 on CompuServe. ■

Funding Opportunity

Reprinted from Education Policy Digest (Ed-POL-D) February 1994 Vol. One, No. 2 Copyright (c) Scholastic Network, Scholastic Inc. 555 Broadway, New York, NY 10012 phone: 212-343-4920; fax: 212-343-4951.

The NSF will institute a \$10 million dollar National Science Foundation Program to institute a series of single and multi-year grants ranging from \$50,000 to \$3 million through its Instructional Materials Development program.

□ **Goal:** Projects should enhance the pedagogy and content of classroom instruction in science, math and technology disciplines and enable all students to succeed, regardless of background or ability.

□ **NSF Deadline:** Proposals are due May 15, 1994 and Nov. 15, 1994, but applicants are encouraged to submit preliminary proposals at least two months prior to the deadline. ■

Backup Schedules

Disk Backup Schedules

SYSTEM	BACKUP	DESCRIPTION
Administrative MVS/SP	Daily	Monday - Friday around 7 p.m. (after COM-LETE is shut down) & on Saturday & Sunday if COM-LETE has been up that day.
	Weekly	Full pack dumps taken each Sunday morning.
	Monthly	Full pack dumps taken on the first day of each month.
Academic MVS/SP	Daily	Monday - Sunday during the early hours of the morning.
	Weekly	Full pack dumps taken each Sunday.
	Monthly	Full volume dumps taken on the first day of each month.
VM/XA	VM Weekly	Early every Wednesday morning.
	CMS mini-disks	Daily backup performed early every morning. Weekly backup every Tuesday starting after Midnight.
VAX	Semester	Once a semester, a permanent backup is taken.
	Daily	Incremental backups are performed Monday - Thursday at 5 p.m. Saturday & Sunday at 5 p.m.
	Weekly	Full backups are performed every Friday beginning at 8 a.m. Generally lasts all day.
	Monthly	A "stand-alone" backup is performed monthly. Dates and times are given in the system log-on message.
Sol, Jove	Semester	Once a semester, a permanent backup is taken.
	Daily	Incremental backups are performed Sunday - Friday at 2 a.m.
	Weekly	Full backups are performed every Saturday at 3 a.m.
	Semester	Once a semester, a permanent backup is taken.

A full description of the system backup procedures can be found by typing **HELP BACKUP** on the VAX. ■



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CLIP TIP

Educational Technology Conference Calendar

Abbreviated forms of this calendar with current listings only appear in print in the ISTE members' newsletter *ISTE Update* and in the *Educational Irm Quarterly*. Send announcements or corrections for either the print or on-line version to: Jodie Rogers, Assistant Editor International Society for Technology in Education 1787 Agate Street Eugene, OR 97403-1923 FAX 503/346-5890 CompuServe: 70014,2117 Internet: ISTE@Oregon.uoregon.edu AppleLink: ISTE America Online: ISTE. When submitting an announcement, please include contact data for participants rather than exhibitors, and indicate if the conference is sponsored by an ISTE Organization Affiliate.

MAY

- ☐ **1-7 Fourth East/West Invitation Seminar on New Technologies in Education**, Budapest, Hungary; International Technology Exchange, Box 49, Bloomfield, CT 06002; fax 203/242-7002; E-mail: budapest@uhavax.hartford.edu.
- ☐ **2-5 SUPERCOMM '94**; New Orleans, LA; Judi McAda, Executive Director-Media Relations and Special Events, United States Telephone Association, 900 19th Street, N.W., Suite 800, Washington, DC 20006-2190; ph. 202/835-3168; fax 202/457-4939.
- ☐ **10-12 National Online Meeting & IOLS '94**, New York, NY; National Online Meeting, Learned Information, Inc., 143 Old Marlton Pike, Medford, NJ 08055; ph. 609/654-6266; fax 609/654-4309.
- ☐ **11-14 Canadian Association for Distance Education (CADE) '94 Conference**, "Distance! Quelle Distance?"; Vancouver, BC; CADE '94, Centre for Distance Education, Simon Fraser University, Burnaby, BC V5A 1S6 Canada; ph. 604/291-3524; fax 604/291-4964; E-mail: Heather_Persons@sfu.ca.
- ☐ **16-23 CeBIT '94 Hannover (World Center for Office, Information and Telecommunications Technology; Hannover, Germany)**; (US Contact) Hannover Fairs USA, Inc., 103 Carnegie Center, Princeton, NJ 08540; ph. 609/987-1202; fax 609/987-0092.

JUNE

- ☐ **12-15 Association for Media and Technology in Education in Canada (AMMTEC '94) Conference**; Lethbridge, AB; AMTEC T94, c/o Conference Services, University of Lethbridge, 4401 University Drive, Lethbridge, AB T1K 3M4 Canada; ph. 403/329-2244; fax 403/329-5166.
- ☐ **13-15 National Educational Computing Conference (NECC) 1994**, "Recreating the Revolution"; Boston MA; Donella Ingham, NECC Coordinator, ISTE, 1787 Agate Street, Eugene, OR 97403-1923; ph. 503/346-2834; fax 503/346-5890; E-mail: Donella_Ingham@ccmail.uoregon.edu.
- ☐ **17-22 RESNA '94**, "Tuning in to the 21st Century Through Assistive Technology: Listen to the Music"; Nashville, TN; RESNA, Suite 700, 1101 Connecticut Avenue NW, Washington, DC 20036; ph. 202/857-1199.
- ☐ **25-29 World Conference on Educational Multimedia and Hypermedia, "ED-MEDIA 94"**; Vancouver, Canada; Association for the Advancement of Computing in Education, P.O. Box 2966, Charlottesville, VA 22902; ph. 804/973-3987; fax 804/978-7449; E-mail: AACE@virginia.edu.
- ☐ **27-7/1 International Federation for Information Processing International Working Conference on Elementary Education (WG3.5)**; Philadelphia, PA; Conference Secretariat, IFIP WG3.5 '94, Rosemont College, Rosemont, PA 19010; fax 215/527-0341; E-mail: Rosemont@Villvm.
- ☐ **30-7/2 5th International Technology Conference, "New Technology in Education"**; Troitsk, Russia; Peter Hatcher, President, Global Technology Projects/SIG of Computer Using Educators, Inc., 3835 Carmel Way, San Leandro, CA 94578; fax 510/483-7647; E-mail: phatcher@igc.com.

JULY

- ☐ **5-8 First International Conference on Distance Education in Russia, "Distance Learning and New Technologies in Education"**; Moscow, Russia; Conference Secretariat, ROSNIIS (12-4), 22 Shepkina, 129090 Moscow, Russia; fax +7-095-954-5127; E-mail: de_russia_1994@aie.msk.su.
- ☐ **9-13 Computers in Applied Linguistics Conference (CALC)**, "A Decade of Commitment"; Ames, IA; Carol Chappelle, 203 Ross Hall, Iowa State University, Ames, IA 50011; E-mail: carolc@iastate.edu.
- ☐ **11-15 ConnSense '94, Using Technology for Inclusion**; Cromwell, CT; Chauncy N. Rucker, Director, A.J. Papanikou Center Technology Lab, U-64, 249 Glenbrook Road, Storrs, CT 06269-2064; ph. 203/486-0165.
- ☐ **21-23 1994 International Symposium on Mathematics/Science Education and Technology**, "Emerging Issues & Trends"; San Diego, CA; 1994 Symposium, AACE, P.O. Box 2966, Charlottesville, VA 22902 USA; ph. 804/973-3987; fax 804/978-7449; E-mail: AACE@Virginia.Edu.
- ☐ **23-29 International Simulation and Gaming Association (ISAGA) 25th Anniversary Conference**; Ann Arbor, MI; Dr. Richard D. Duke, Graduate Program in Gaming and Simulation, School of Architecture and Urban Planning, University of Michigan, Ann Arbor, MI 48109; ph. 313/764-1300; fax 313/663-3690; E-mail: Richard_Duke@um.cc.umich.edu. ■

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Benchmarks is a vital link between the UNT Computing Center and the users of our facilities. It is important for all users of the computing facilities to maintain a file of these newsletters because they contain materials that will periodically update existing documents as well as information and suggestions on uses of OS/MVS, CMS, the VAX, Sol, Jove, Microcomputers, and other resources available to UNT students and faculty. To facilitate the dispersal of *Benchmarks*, *** **FREE** *** subscriptions are available. To receive yours, send the following information to us either by snail mail (the post office or campus mail), FAX (817) 565-4060, or through electronic mail, to the User-ID AS04 on VMS, SOL, or CMS.

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